

# **Finger Lakes National Forest Monitoring and Evaluation Guide 2007**



American kestrel monitoring on the Finger Lakes National Forest  
Conducted in association with Kevin Griffith, July 2006

This document available in large print upon request.



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# **Chapter 1 Introduction to the Monitoring and Evaluation Guide**

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# Chapter 1 Introduction to the Monitoring and Evaluation Guide

## 1.1.1 Introduction

Monitoring and evaluation are required by the National Forest Management Act to determine how well the Land and Resource Management Plan (Forest Plan) is being implemented.

Monitoring and evaluation are divided into three broad categories and are designed to answer the following basic questions:

1. **IMPLEMENTATION MONITORING - Did we do what we said we were going to do?** This question answers how well the direction in the Forest Plan is being implemented. Collected information is compared to Management Area direction and Forest-wide Objectives, Standards, and Guidelines.
2. **EFFECTIVENESS MONITORING - Are the standards and guidelines working?** This question answers whether the application of standards and guidelines is achieving the results envisioned in the Forest Plan.
3. **VALIDATION MONITORING - Is our understanding of the situation and information available correct?** This question answers whether the assumptions and predicted effects used to formulate the goals and objectives are accurate.

Chapter 4 (Monitoring and Evaluation Chapter) of the 2006 Forest Plan provides programmatic direction for monitoring and evaluating Forest Plan implementation. It defines the overarching, strategic questions that must be addressed by the Forest Service through monitoring, including broad timetables and schedules for analysis and reporting. This Monitoring and Evaluation Guide (Monitoring Guide) provides more specific procedural guidance to implement the monitoring strategy outlined in the Forest Plan. This Monitoring Guide contains specific monitoring elements, along with methods, protocols, and analytical procedures to be followed (see Chapter 4 of the

Forest Plan for more details on the linkage between these documents). This Guide is a suite of monitoring activities that may be used to help managers understand and answer the Forest Plan monitoring questions. The Forest Service will select specific monitoring activities from this Guide during Forest Plan implementation. Monitoring activities may be added or dropped from this Guide as the Forest Service learns through implementation or as additional monitoring methods become available.

The monitoring and evaluation process enables the Forest Service to assess its effectiveness in moving toward stated management goals and desired conditions. The 2006 Forest Plan may be amended or revised to adapt to new information and changed conditions identified through monitoring and evaluation efforts. Through this adaptive management approach, the Forest Plan is kept current.

## 1.1.2 Monitoring Approach

Monitoring and evaluation are separate, sequential activities. *Monitoring* is the systematic collection of information that reflects changes in actions, conditions, and resource relationships on the Forest. *Evaluation* is the analysis and interpretation of the information collected during monitoring. A key purpose of a monitoring strategy is that the public be given timely, accurate information about Forest Plan implementation. This is done through the release of an annual monitoring and evaluation report.

The Annual Monitoring and Evaluation Report provides a forum for the review of current-year findings. This report displays monitoring results including: what monitoring activities were completed; what Forest Plan monitoring questions were addressed; how

well the monitoring addressed those questions; and if future monitoring activities may need modified. The Annual Monitoring and Evaluation Report will include evaluation of data or comparison of results with those from previous years to identify trends and highlight where management is or is not achieving desired goals. It is during this annual review that Forest Service staff can determine if modifications to the 2006 Forest Plan or the Monitoring Guide are necessary. Priorities for monitoring also will be reviewed and revised (if necessary) each year by Forest Service program managers with responsibility for particular resource areas.

In addition to the Annual Monitoring and Evaluation Report, the Forest Service will produce a comprehensive report every five years. The Annual Monitoring and Evaluation Reports will serve as the foundation for developing the comprehensive report. The comprehensive report will summarize conditions and trends for social, economic, and ecological resources; compare existing conditions to desired conditions; and determine aspects of the Forest Plan that may need amended or revised to adapt to new information and changed conditions.

### 1.1.3 Monitoring Prioritization

As noted in the 2006 Forest Plan, budgetary constraints affect the level of monitoring that can be done in a fiscal year. In addition to providing for public involvement, the monitoring program must be efficient, practical, and affordable, and may make use of data that has been or will be collected for other purposes. Monitoring tasks are scaled to the Forest Plan, program, or project to be monitored. Each of these entails different objectives and requirements. Monitoring is not performed on every single activity, nor must it meet the statistical rigor of formal research.

Consequently, a prioritization process for Monitoring Guide items was developed to ensure efficient use of limited time, money, and personnel, within the parameters identified in

Chapter 4 of the Forest Plan. If budget levels limit the Forest Service's ability to perform all monitoring tasks, then the highest priority tasks are funded first. (see Chapter 2 for priority ranking of monitoring activities). The Monitoring Guide establishes a prioritization process for the monitoring items, and the annual monitoring schedule identifies which items will be measured given the current year's funding levels. Priorities may be revised each year. The following questions were used in the prioritization process:

- Is there a high degree of uncertainty associated with management assumptions?
- Is there a high degree of disparity between existing and desired conditions?
- Are proposed management activities likely to affect resources of concern?
- What are the consequences of incomplete knowledge or uncertainty about resource conditions?
- Does monitoring provided needed information to respond to key issues?
- Can monitoring questions be addressed in a cost-effective manner?

The Monitoring Guide itself is dynamic, and may be subject to periodic revision to meet current needs during the life of the Forest Plan. The annual monitoring schedules will be subject to budgetary considerations, emerging research, and issue-driven factors that will influence monitoring priorities from year to year.

### 1.1.4 Monitoring Methods, Tools, and Sources

This Monitoring Guide contains specific monitoring items along with methods, protocols, and analytical procedures for monitoring them. Monitoring design and data collection will follow accepted national standards. Data will be catalogued into appropriate corporate databases such as Automated Lands Program (ALP), Natural Resource Inventory System (NRIS), or Geographic Information System (GIS).

In seeking to assess the effectiveness of efforts to implement the Forest Plan and accomplish high quality, on-the-ground results, the Forest Service will use a wide variety of tools, methods, and information sources. Although this Monitoring Guide provides details for specific monitoring efforts, many other information sources may be used. Not all monitoring information will result from site-specific sampling efforts.

Information sources and monitoring methods to be used in evaluating Forest Service effectiveness may include any or all of the following:

- Accomplishment reports
- Annual project field reviews and National Environmental Policy Act (NEPA) compliance reviews
- General management reviews
- Functional Assistance Trips and Activity Reviews
- Project Administration (Permit/Contract Administrator reports and inspection reports)
- Data or information provided by contractors, permittees, partners, cooperators, researchers, conservation organizations, and other State and Federal agencies.

### 1.1.5 Purpose of the Monitoring and Evaluation Guide

It must be emphasized that the Monitoring Guide is a guide – it is not a decision document. It is intended to provide guidance for the execution of Forest monitoring and evaluation activities required by NFMA. The monitoring and evaluation process enables the Forest Service to assess its effectiveness in moving toward stated management goals and provides a forum for adaptive management. The 2006 Forest Plan may be amended or revised to adapt to new information and changed conditions identified through monitoring and evaluation.

The purpose of the Monitoring Guide is to identify specific items that respond to the programmatic monitoring items described in Tables 4.1-3 through 4.1-7 of the Forest Plan. The Monitoring Guide provides a menu of monitoring activities from which Forest Service staff may select the methods used to collect and analyze the data. In addition, it describes the purpose, locations, cooperators, and estimated costs. Each year, an interdisciplinary team will review the monitoring items and the monitoring questions and will work to develop a monitoring schedule for the upcoming year that takes into account available budgets. Specific components of each item in the Monitoring and Evaluation Guide include:

**Monitoring Item Name:** Descriptive name for the monitoring item.

**Monitoring Question/Detailed Monitoring Question:** What questions will the monitoring attempt to answer?

**LRMP (Forest Plan) Tables Addressed:** The table reference(s) in Chapter 4 of the Forest Plan that this monitoring item addresses.

**LRMP Reference:** The objectives, standards, or guidelines in the Forest Plan that this monitoring item addresses.

**LRMP Rationale/Driver:** Provides the purpose of monitoring for achieving Forest Plan objectives or desired future conditions.

**Indicator and Measure:** Specific data needed, usually expressed in the form of measurable or quantifiable units (i.e.: miles of trail, acres of harvest, etc.)

**Data Collection Method:** The specific techniques are described. The sampling technique descriptions may include the protocols being followed, unit of measure for each data element, reference values (thresholds or trigger points), spatial scale, and a description of the evaluation process.

**Sample Design:** Provides an example of how the data collection methods would be utilized on-the-ground.

**Frequency of Measurement:** Describes how often information is gathered or measured. For example, may be annually, every three-five years, or every ten years. Some resources need to be monitored annually to produce trend data. The frequency of measurement and evaluation is established in the Forest Plan, Chapter 4.

**Analysis Method:** Defines how the information will be analyzed.

**Last Year Accomplished:** Describes the Fiscal year the data collection was last collected.

**Fiscal Year Scheduled:** Describes the next Fiscal year the data will be collected.

**Reporting Frequency:** Defines how often the information is analyzed and reported. Depending upon the question being answered, analysis of the information may occur at longer time intervals than the frequency of monitoring.

**Cost for year scheduled:** Dollar value cost to complete the monitoring during the next year scheduled. These estimates are for direct costs of retrieval or collection of data. Estimates do not include administrative overhead or other similar indirect costs (unless otherwise noted).

**Cost for decade:** Dollar value cost to complete the monitoring during the decade. These estimates are for direct costs of retrieval or collection of data. Estimates do not include administrative overhead, supervision, contract preparation, or other similar indirect costs (unless otherwise noted).

**Cost Explanation:** Explanation of the expenses associated with the monitoring item. This may also include dialogue about funding sources and any other comments related to financing the monitoring item.

**Cooperators:** Who is involved in the data collection, processing, and analysis? These may include Forest Service and non-Forest Service personnel.

## 1.1.6 Using the Monitoring and Evaluation Guide

The Monitoring and Evaluation Guide will serve several purposes including:

- Aid in planning monitoring budgets by allowing for out-year scheduling (which is particularly useful for items with data collection intervals of 2, 3, or 5 years)
- Store and assist in prioritization of monitoring items used to generate the Annual Monitoring Plan
- Provide framework for generating Annual Monitoring and Evaluation Reports that will be integrated into five-year Comprehensive Reports

## 1.1.7 Annual Monitoring and Evaluation Report

Developed by an interdisciplinary team working with the Forest Supervisor, the Annual Monitoring and Evaluation Report summarizes the results of monitoring, evaluates monitoring activities and evaluates information collected in relationship to plan implementation. Over time, the monitoring information will help the Forest Service determine whether the observed changes on the Forest are consistent with Forest Plan desired future conditions, goals, and objectives and what adjustments may be needed. The Forest Supervisor uses this information either to certify the Forest Plan as sufficient for management in the coming year, or to decide that the Plan needs to be amended.



Key questions to be addressed through monitoring and evaluation are:

- Are standards and management direction being followed?
- How well are objectives of the Forest Plan being achieved?
- Do management prescriptions respond to issues, concerns, and opportunities?
- Are effects of Forest Plan implementation occurring as predicted?
- Is the Forest progressing toward its long-term goals?
- Is the monitoring activity working as designed and providing the desired information?
- Are there opportunities to share information (partnerships)?

In summary, the Annual Monitoring and Evaluation Report:

- Reviews the results of monitoring activities during the preceding year
- Assesses the effectiveness of management practices in achieving goals, objectives, and desired conditions (outcomes) specified in the Forest Plan
- Compares the actual outputs, services, and costs with those estimated in the Forest Plan
- Evaluates the data for indicators of trends or effects
- Identifies a need to amend or revise the Forest Plan
- Identifies research needed by the National Forest System

This Annual Monitoring and Evaluation Report may provide summaries of data collected, but is primarily written to display evaluation of the data, conclusions, and recommendations. Comparison of subsequent monitoring and evaluation reports provides a means to track management effectiveness over time and to show the changes that have been made or are still needed.

## Chapter 2 Monitoring Items Summary Report

<i>Resource Name</i>	<i>Monitoring Item</i>	<i>Priority</i> <i>(5=High, 1=Low)</i>	<i>Estimated Cost (\$)</i>
Aquatic Habitat	Pond Habitat	4	700
Aquatic Population - Lakes	Pond Fisheries	4	2,000
Fire	Fire Agreements	3	0
Fire	Fire Prevention	4	250
Fire	Hazardous Fuels	3	500
Fire	Prescribed Fire	4	1,000
Forest Health	How is tree health changing over time?	5	10,000
Forest Health	Increase of Destructive Insects and Diseases	3	2,000
Forest Health	Prescribed Burning Effects on Residual Trees	3	600
Heritage	Heritage Resource Program Objectives	2	350
Heritage	Heritage Resource S&Gs	3	2,000
Heritage	Heritage Resource Site Protection	3	500
Human Dimensions	Forestry Education Sites and Products	4	1,000
Human Dimensions	Partnerships Maintenance & Enhancement	3	1,000
Human Dimensions	Payments to towns	2	100
Human Dimensions	Teacher professional development in Forest stewardship	3	100
Invasive Species Population	Non-native invasive species	4	5,000
Lands	Land Ownership Adjustment	2	0
Lands	Special Uses - Lands	3	250
Program Management	Costs of Plan Implementation	4	0
Program Management	Desired Future Condition	5	500
Program Management	Innovative, Coordinated Management and Energy Conservation	4	2,000
Program Management	Outputs Accomplished - Other Resources	4	500
Program Management	Standards & Guidelines Compliance	4	1,000
Program Management	Standards and Guidelines - Implementation and Effectiveness Monitoring	4	7,000
Range	Animal Unit Months	3	6,000
Range	Watering facilities functional	4	3,000

<i>Resource Name</i>	<i>Monitoring Item</i>	<i>Priority</i> (5=High, 1=Low)	<i>Estimated Cost (\$)</i>
Rare Plants Population	RFSS Plant Population Trends	4	2,000
Recreation	Effects of vehicle use off roads	3	1,000
Recreation	Recreation Facility Maintenance	4	2,000
Recreation	Recreation Visitor Satisfaction	2	32,000
Recreation	ROS settings	3	1,200
Recreation	Scenic Integrity Objectives (SIO's)	2	0
Recreation	Special Uses - Recreation	3	250
Recreation	Trail maintenance	4	2,000
Recreation	Trends in trail partnerships	4	500
Recreation	Visual Quality Objectives (VQO's)	4	2,000
Soils	Long Term Soil Quality and Soil Productivity Monitoring	4	10,000
Soils	Soil and Water S&G, Mitigation Measure, and Soil Quality Standard Compliance	3	2,000
Terrestrial Ecological Units	Ecological Type Mapping and Representation	3	1,000
Terrestrial Wildlife Habitat	Grassland Habitat	5	2,500
Terrestrial Wildlife Habitat	MIS Habitat Trends	5	1,000
Terrestrial Wildlife Habitat	Wildlife Reserve Trees	3	2,000
Terrestrial Wildlife Population	Bald Eagle	2	0
Terrestrial Wildlife Population	MIS Population Trends	5	1,500
Terrestrial Wildlife Population	Northern Goshawk	2	0
Terrestrial Wildlife Population	TES Bats	5	1,000
Terrestrial Wildlife Population	TES Herptiles (snakes, turtles, salamanders)	3	500
Terrestrial Wildlife Population	TES Mammals (wolf, cougar, lynx)	2	0
Terrestrial Wildlife Population	West Virginia White (RFSS butterfly)	2	2,500
Vegetation	Age Class Distribution within lands where even-aged management is allowed	4	300
Vegetation	Aspen-Birch & Early Successional Habitat	5	
Vegetation	Conversion of conifer plantations to native hardwoods	4	
Vegetation	Forest-wide Habitat Composition (landscape scale)	4	1,000
Vegetation	Late-successional forest	3	2,000
Vegetation	Oak and Oak-Pine Forest Maintenance and Restoration	5	300

<i>Resource Name</i>	<i>Monitoring Item</i>	<i>Priority</i> (5=High, 1=Low)	<i>Estimated Cost (\$)</i>
Vegetation	Oak Regeneration	5	300
Vegetation	Outputs Accomplished - Volume and Acres of Timber Offered and Sold	5	500
Vegetation	Rare or Outstanding Natural Areas	3	2,000
Vegetation	Regeneration Harvest Opening Size	3	4,000
Vegetation	Shelterwood with Reserves	4	1,000
Vegetation	Stocking Level	3	1,000
Vegetation	Suited Timber Lands	3	10,000
Vegetation	Sustainability of Special Forest Product Gathering	3	500
Vegetation	Trends in Vegetative Community Composition (site-level scale)	5	10,000
Vegetation	Uneven-aged Management	3	300
Water	Forest-wide Water Quality Monitoring (FLNF)	3	4,500

## Chapter 3 Resource Monitoring Direction

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**Monitoring Item Name:** Pond Habitat

Item Reference # 49

**Monitoring Question** To what extent do Forest Service Management activities contribute toward restoration and maintenance of habitat for native and desirable non-native species?

**Detailed Monitoring Question:** Is habitat quality and quantity being maintained in FLNF ponds? Is aquatic vegetation encroaching upon more of the surface area of ponds? Are water control structures well maintained and support adequate water levels in ponds?

**LRMP Tables Addressed:**

LRMP 4.1-3	LRMP 4.1-4	LRMP 4.1-5	LRMP 4.1-6	LRMP 4.1-7
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**LRMP Reference:** Goal 4: Maintain or restore aquatic, fisheries, riparian, and wetland habitats.

**LRMP Rationale/Driver:** to provide suitable fish habitat in FLNF ponds for resource protection and recreational fishing purposes.

**Indicator & Measure:** Indicator (s) - water depth and aquatic vegetation

Measure - max water depth to hard pan; aquatic vegetation not exceeding more than 50% of surface water area or levels that would constrict fish population monitoring with nets and seines.

**Data Collection Method:** measured and photo monitoring

**Sample Design:** estimates of area occupied by aquatic vegetation as a percent of the total pond area and estimated water level as a % of the pond being at full capacity.

**Frequency of Measurement:** Annually

**Analysis Method:** evaluation of habitat conditions compared to desired conditions and indicator measures.

**Last Year Accomplished:** **Cost for Year Scheduled:** \$700

**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$7,000

**Reporting Frequency:** Annually

**Estimated Cost - Explanation:** involves annual inspection of pond outlet structures to ensure they are functioning properly, and develop maintenance if necessary; estimate and record the percentage of aquatic vegetation cover the ponds surface. Ponds are photographed every 3 years to document changes over time.

**Cooperators:**

**Category: Aquatic Population - Lakes****Monitoring Direction****Monitoring Item Name:** Pond Fisheries

Item Reference # 48

**Monitoring Question** To what extent are Forest Service management activities contributing toward population viability for native and desired non-native species?**Detailed Monitoring Question:** Are fish populations in ponds being maintained at levels to sufficient to support a recreational fisheries or natural reproduction. If not, is supplemental stocking or habitat improvement required?**LRMP Tables Addressed:**  
LRMP 4.1-3 ☒ LRMP 4.1-4 ☒ LRMP 4.1-5 ☐ LRMP 4.1-6 ☐ LRMP 4.1-7 ☐**LRMP Reference:** S&Gs 2.3.9 - Fisheries**LRMP Rationale/Driver:** There are a number of selected ponds throughout the FLNF that are being managed to provide suitable habitat for warm water fisheries and recreational fishing. There are also 3 ponds that are stocked annually to maintain a seasonal trout fishery.**Indicator & Measure:** Indicator - presence of LM bass and forage fish

Measure - presence of multiple age classes in the fishery

**Data Collection Method:** Standard gill netting or seining methods**Sample Design:** 1-2 gill net sets per ponds for 2 hr minimums**Frequency of Measurement:** Annually**Analysis Method:** fish survey and statistical analysis**Last Year Accomplished:** **Cost for Year Scheduled:** \$2,000**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$20,000**Reporting Frequency:** Annually**Estimated Cost - Explanation:** cost for personnel to travel to FLNF, perform work, conduct analysis and prescribe mgt. recommendations.**Cooperators:** NYSDEC

**Category: Fire****Monitoring Direction****Monitoring Item Name:** Fire Agreements

Item Reference # 54

**Monitoring Question** To what extent have Standards and Guidelines been applied?**Detailed Monitoring Question:** How many agreements have been developed and maintained with outside partners?**LRMP Tables Addressed:**  
LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☒ LRMP 4.1-7 ☐**LRMP Reference:** S&Gs 2.3.11 - Fire management**LRMP Rationale/Driver:** tThis item may need to be deleted for the FL - I don't know if agreements happen or are desired on the FL (dnh)**Indicator & Measure:** # of agreements established annually  
longevity of agreements with each entity**Data Collection Method:** lweb database can be queried for formal agreements; also FMO will tally**Sample Design:****Frequency of Measurement:** Annually**Analysis Method:****Last Year Accomplished:** **Cost for Year Scheduled:** \$0**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$0**Reporting Frequency:** Annually**Estimated Cost - Explanation:** costs are included in Fire Prevention item**Cooperators:**



**Category: Fire****Monitoring Direction****Monitoring Item Name:** Fire Prevention

Item Reference # 52

**Monitoring Question** To what extent have Standards and Guidelines been applied?**Detailed Monitoring Question:** How many wildfires were suppressed with no reportable accidents/injuries or damage to private property? How many acres of private property burned from fires with ignition on Forest Service land?**LRMP Tables Addressed:** LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☒ LRMP 4.1-7 ☐**LRMP Reference:** S&Gs 2.3.11 - Fire management**LRMP Rationale/Driver:** Standard 1, Guideline 4, and generally the need to prevent wildfires on NFS from affecting adjacent private**Indicator & Measure:** Number of wildfires suppressed with no reportable accidents/injuries or damage to private property. Number of acres of private property burned from fires with ignition on Forest Service land.**Data Collection Method:** data is gathered by fire managers and stored in the National Fire Report Database**Sample Design:****Frequency of Measurement:** Annually**Analysis Method:****Last Year Accomplished:** **Cost for Year Scheduled:** \$250**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$2,500**Reporting Frequency:** Annually**Estimated Cost - Explanation:** cost is anticipated to be \$250/year to compile and report data.**Cooperators:**

**Category: Fire****Monitoring Direction**

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**Monitoring Item Name:** Hazardous Fuels

Item Reference # 53

**Monitoring Question** To what extent have Standards and Guidelines been applied?**Detailed Monitoring Question:** To what extent have hazardous fuels been reduced?**LRMP Tables Addressed:**  
LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☒ LRMP 4.1-7 ☐**LRMP Reference:** S&Gs 2.3.11 - Fire management**LRMP Rationale/Driver:** Guidelines 1-4**Indicator & Measure:** number of acres treated for hazardous fuels reduction**Data Collection Method:** Acres treated are tallied by Fire Program and reported nationally**Sample Design:****Frequency of Measurement:** Annually**Analysis Method:****Last Year Accomplished:** **Cost for Year Scheduled:** \$500**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$5,000**Reporting Frequency:** Annually**Estimated Cost - Explanation:****Cooperators:**

**Monitoring Item Name:** Prescribed Fire  
Item Reference # 51

**Monitoring Question** What are the effects of management practices prescribed by the 2006 Forest Plan?

**Detailed Monitoring Question:** Is prescribed fire being effectively used as a tool to meet management objectives set forth in the Forest Plan? Are prescribed burns meeting the fire effect objectives set forth in each burn plan?

**LRMP Tables Addressed:** LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☒ LRMP 4.1-7 ☐

**LRMP Reference:** Goal 5: Maintain or restore ecological processes and systems on the FLNF within desired ranges of variability, including a variety of native vegetation and stream channel types, and their patterns and structural components.

**LRMP Rationale/Driver:** Objectives 2 & 3; also Goal 2 maintaining habitat for viable populations of species, particularly with early successional and upland opening habitats, and with oak-pine habitat. This monitoring will help managers determine if prescribed burns are providing the results expected.

Also Fire management S&Gs (all of them)

**Indicator & Measure:** vegetation, soils, fuels characteristics - TBD

**Data Collection Method:** Priority is for monitoring understory burns. Use FIREMON ([www.fire.org](http://www.fire.org)) FIREMON (fire Effects Monitoring and Inventory System) is a comprehensive monitoring system designed to satisfy fire management agency monitoring requirements. FIREMON includes components and instructions enabling field personnel to design a monitoring project, conduct field sampling and store and analyze their fire effects and other monitoring data.

**Sample Design:**

**Frequency of Measurement:** Annually

**Analysis Method:**

**Last Year Accomplished:** **Cost for Year Scheduled:** \$1,000

**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$10,000

**Reporting Frequency:** Annually

**Estimated Cost - Explanation:** reporting may also be tied to burning frequency.  
1 week/ burn of GS-6 level dependant on size and complexity of burn units and ecological objectives; possibly completed through cooperation with The Nature Conservancy partners

**Cooperators:** The Nature Conservancy

**Monitoring Item Name:** How is tree health changing over time?

Item Reference # 64

**Monitoring Question** To what extent are air quality and atmospheric deposition affecting sensitive components of the forest ecosystem?

**Detailed Monitoring Question:** How is tree health changing over time from the influence of acid deposition, climate change, invasive species and other environmental problems, in combination and separate from land management practices.

**LRMP Tables Addressed:**

LRMP 4.1-3	LRMP 4.1-4	LRMP 4.1-5	LRMP 4.1-6	LRMP 4.1-7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**LRMP Reference:** Goal 8: Provide for a sustainable supply of forest products.

**LRMP Rationale/Driver:** EO 11991 Protection and Enhancement of Environmental Quality

**Indicator & Measure:** Indicator: Tree Health  
Measures: Biomass productivity; Incremental growth; Tree survival; tree decline (foliage density, dieback, crown density)

**Data Collection Method:** To be determined by 2011.

**Sample Design:** To be determined

**Frequency of Measurement:** 5 Years

**Analysis Method:** To be determined

**Last Year Accomplished:** **Cost for Year Scheduled:** \$10,000

**Fiscal Year Scheduled:** 2011 **Cost Per Decade:** \$10,000

**Reporting Frequency:** 5 Years

**Estimated Cost - Explanation:** Costs in 2011 to develop data collection and analysis methods. First year of data collection is 2012. Costs for data collection to be determined.

**Cooperators:**

<b>Monitoring Item Name:</b>	Increase of Destructive Insects and Diseases			
Item Reference #	47			
<b>Monitoring Question</b>	Are insect and disease levels compatible with objectives for maintaining healthy forest conditions?			
<b>Detailed Monitoring Question:</b>	To what extent have destructive insects and disease organisms increased?			
<b>LRMP Tables Addressed:</b>	LRMP 4.1-3 <input checked="" type="checkbox"/>	LRMP 4.1-4 <input type="checkbox"/>	LRMP 4.1-5 <input type="checkbox"/>	LRMP 4.1-6 <input type="checkbox"/>
<b>LRMP Reference:</b>	S&Gs 2.3.10 - Forest health and disturbance processes			
<b>LRMP Rationale/Driver:</b>	This monitoring helps track trends in insect and disease activity. It can be used to determine when management action should take place.			
<b>Indicator &amp; Measure:</b>				
<b>Data Collection Method:</b>	Record the number of outbreaks (and acres affected) for each insect and disease organism (quantitative). Unless "damaging levels" have been concretely defined, a quantitative assessment of suppression will be made. S&PF Forest Health Protection conducts an annual aerial detection survey. Hotspots are mapped while in the air and later followed up with a ground survey, truthing the identification of the organism causing the damage. They also summarize these efforts in an annual report that can be used as a source for the Forest monitoring report.			
<b>Sample Design:</b>	Number of outbreaks Acres affected Species of insects and diseases			
<b>Frequency of Measurement:</b>	Annually			
<b>Analysis Method:</b>	The analysis is conducted by S&PF - Forest Health Protection. If warranted, a biological assessment will be conducted to recommend treatment strategies.			
<b>Last Year Accomplished:</b>		<b>Cost for Year Scheduled:</b>	\$2,000	
<b>Fiscal Year Scheduled:</b>	2007	<b>Cost Per Decade:</b>	\$20,000	
<b>Reporting Frequency:</b>	Annually			
<b>Estimated Cost - Explanation:</b>	S&PF funds the cost of the aerial detection survey. Costs are shown for routine reporting. If a problem occurs, protocols will have to be developed for the specific situation and costs identified for more intensive surveys.			
<b>Cooperators:</b>	State & Private Forestry - Durham, NH			

<b>Monitoring Item Name:</b>	Prescribed Burning Effects on Residual Trees		
Item Reference #	43		
<b>Monitoring Question</b>	Are the effects of Forest management, including prescriptions, resulting in significant changes to productivity of the land?		
<b>Detailed Monitoring Question:</b>	What effects has a prescribed burn conducted in 1991 had on the residual trees and regeneration for a stand along the Interloken Trail? .		
<b>LRMP Tables Addressed:</b>	LRMP 4.1-3 <input type="checkbox"/>	LRMP 4.1-4 <input type="checkbox"/>	LRMP 4.1-5 <input type="checkbox"/>
			LRMP 4.1-6 <input type="checkbox"/>
			LRMP 4.1-7 <input checked="" type="checkbox"/>
<b>LRMP Reference:</b>	Goal 9: Demonstrate innovative, scientifically, and ecologically sound management practices that can be applied to other lands.		
<b>LRMP Rationale/Driver:</b>	The Forest Plan encourages using innovative management practices such as prescribed burning as a demonstration applying ecosystem approaches to forest management.		
<b>Indicator &amp; Measure:</b>	The indicators are dbh growth, mortality and regeneration.		
<b>Data Collection Method:</b>	The plot centers had been marked with a metal fence posts. The trees have been tagged with a driven wire and a numbered aluminium tag. The trees have been measured at DBH and the condition noted. Although annual measurements have been collected, data collection could be taken every 5 years.		
<b>Sample Design:</b>	Two 1/5 acre plots were established on April 11, 1991 to monitor the long term effects of a prescribed burn conducted in May 1990. The plots were established after a field visit by Neil Lamson (S&PF Area Silviculturist) and Dr. Ralph Nyland (SUNY-ESF). The plots have been re-measured annually and represent 13+years of data.		
<b>Frequency of Measurement:</b>	5 Years		
<b>Analysis Method:</b>	Analysis of the remeasurement data was conducted by the Forest Silviculturist.		
<b>Last Year Accomplished:</b>		<b>Cost for Year Scheduled:</b>	\$600
<b>Fiscal Year Scheduled:</b>	2007	<b>Cost Per Decade:</b>	\$1,200
<b>Reporting Frequency:</b>	5 Years		
<b>Estimated Cost - Explanation:</b>	The measurements will require 1 person day and 1 person day or less for analysis.		
<b>Cooperators:</b>			

**Monitoring Item Name:** Heritage Resource Program Objectives

Item Reference # 15

**Monitoring Question** To what extent have Objectives been attained?

**Detailed Monitoring Question:** Have Heritage Resource Program Management Objectives related to backlogged site evaluations, meeting curation guidelines, developing a GIS model for prehistoric site locations, increasing partnerships for Section 110 activities, consulting with SHPO and Tribes, and incorporating Heritage components into historic building management plans been addressed?

**LRMP Tables Addressed:**

LRMP 4.1-3	LRMP 4.1-4	LRMP 4.1-5	LRMP 4.1-6	LRMP 4.1-7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**LRMP Reference:** Goal 10: Provide protection and stewardship for significant heritage resources on the FLNF.

**LRMP Rationale/Driver:** Legal: National Historic Preservation Act, Archaeological Resources Protection Act, & Native American Graves Protection and Repatriation Act; S&G 2.3.14 - Tribal, and 2.3.15 - Heritage; Goal 16 - Objectives 1, 3, 4, 5, 6, 7

**Indicator & Measure:**

Indicator 1: Previously inventoried sites evaluated against NRHP criteria  
 Measure 1: % of previously inventoried sites evaluated this FY, & cumulatively  
 Indicator 2: Curation facilities for artifacts & archives meeting CFR 79 standards  
 Measure 2: % of collections in condition and facilities meeting CFR 79  
 Indicator 3: Successful integration of VT SHPO GIS model for location of prehistoric archaeological sites into the GMNF Heritage toolbox.  
 Measure 3: Y/N  
 Indicator 4: Increase partnerships to assist with NHPA Section 110 activities  
 Measure 4: # and ratio of Partnerships with formal documentation, compared to FY06  
 Indicator 5: Consultation with SHPO and Tribes  
 Measure 5: # of contacts/consults with SHPO and individual Tribes in FY  
 Indicator 6: Heritage Resource values as component of Facilities Mgt Plans  
 Measure 6: % of Facility Mgt Plans with a Heritage Resource component completed in FY and cumulatively

**Data Collection Method:**

Indicator 1: review I-Web Heritage data to track number of sites that were evaluated for NRHP eligibility during the year, and compare to the backlog of unevaluated sites.  
 Indicator 2: direct observation of collections and curation facility  
 Indicator 3: review HRR reports to see if predictive model has been used.  
 Indicator 4: count formal partnerships and compare to previous years  
 Indicator 5: develop log of consultations.  
 Indicator 6: count number of facility management plans that have Heritage Resource components.

**Sample Design:**

**Frequency of Measurement:** Annually

**Analysis Method:**

**Last Year Accomplished:** **Cost for Year Scheduled:** \$350

**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$4,100

**Reporting Frequency:** 5 Years

**Estimated Cost - Explanation:** requires 1 day of Archaeologist; plus 1 day at year 5 and 10 for reporting.

**Cooperators:**

<b>Monitoring Item Name:</b>	Heritage Resource S&Gs		
Item Reference #	13		
<b>Monitoring Question</b>	To what extent have Objectives been attained?		
<b>Detailed Monitoring Question:</b>	Have Heritage Resource sites within the Areas of Potential Effect of Forest-sponsored projects (undertakings) been protected and managed according to our Standards and Guidelines?		
<b>LRMP Tables Addressed:</b>	LRMP 4.1-3 <input type="checkbox"/>	LRMP 4.1-4 <input type="checkbox"/>	LRMP 4.1-5 <input type="checkbox"/>
			LRMP 4.1-6 <input checked="" type="checkbox"/>
			LRMP 4.1-7 <input type="checkbox"/>
<b>LRMP Reference:</b>	Goal 10: Provide protection and stewardship for significant heritage resources on the FLNF.		
<b>LRMP Rationale/Driver:</b>	Legal: National Historic Preservation Act, Archaeological Resources Protection Act, and Native American Graves Protection and Repatriation Act; S&G 2.3.14 - Tribal, and 2.3.15 - Heritage; Goal 16 - Objectives 2 & 5		
<b>Indicator &amp; Measure:</b>	Indicator 1: Implementation of S&Gs within projects' Areas of Potential Effect. Indicator 2: Effectiveness of S&G implementation based on Changed Conditions Measure 1: Mitigation Measures/Design Elements implemented (Y/N or %) Measure 2: % of sites within APE with significant Changed Condition due to lack of S&G implementation		
<b>Data Collection Method:</b>	Each Forest undertaking/project includes an inventory of Heritage Resource sites, and protective mitigation measures or project design elements which are intended to protect these sites. The inventory records for these historic properties include descriptive condition reports and sketch maps or images. These serve as the control or baseline for evaluating changes in condition. Field observation and investigation indicates the nature, cause and extent of changed conditions (if any).		
<b>Sample Design:</b>	It would be most useful to conduct project-level S&G monitoring in an integrated manner with other Resource Specialists and project proponents. I propose doing one timber, one rec and one engineering project per year.		
<b>Frequency of Measurement:</b>	Annually		
<b>Analysis Method:</b>	Case-by-case determination of (a) whether S&Gs implemented; (b) effective; and (c) the cause (if any) of Changed Condition(s) for Heritage sites (validation).		
<b>Last Year Accomplished:</b>		<b>Cost for Year Scheduled:</b>	\$2,000
<b>Fiscal Year Scheduled:</b>	2007	<b>Cost Per Decade:</b>	\$20,000
<b>Reporting Frequency:</b>	5 Years		
<b>Estimated Cost - Explanation:</b>	Based on a sample size of monitoring three Forest-sponsored projects per year (1 each from Timber, Rec, Eng), and an estimate of two days of the Forest Archaeologist's time for each project to do pre-work, field visit and analysis, the total is 6 GS-11 days per year -- or about \$2000		
<b>Cooperators:</b>			



**Monitoring Item Name:** Heritage Resource Site Protection

Item Reference # 14

**Monitoring Question** To what extent have Objectives been attained?

**Detailed Monitoring Question:** Have Heritage Resources across the Forest been inventoried and protected?

**LRMP Tables Addressed:**

LRMP 4.1-3	LRMP 4.1-4	LRMP 4.1-5	LRMP 4.1-6	LRMP 4.1-7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**LRMP Reference:** Goal 10: Provide protection and stewardship for significant heritage resources on the FLNF.

**LRMP Rationale/Driver:** Legal: National Historic Preservation Act, Archaeological Resources Protection Act, & Native American Graves Protection and Repatriation Act; S&G 2.3.14 - Tribal, and 2.3.15 - Heritage; Goal 16 - Objectives 2, 4 & 5.

**Indicator & Measure:** Indicator: Changed Condition of Heritage Resource site, such that its information value and/or eligibility to the National Register has been compromised.  
Measure: % of monitored sites with significant Changed Condition

**Data Collection Method:** Comparison of Condition description in inventoried Heritage Resource site database to the current condition leads to a Changed Condition determination.

**Sample Design:** Our sample size (e.g., # of compartments and #sites) is entirely budget-driven. The location of our sample is derived through a combination of knowledge gaps (places where we know very little), opportunity, and corporate need (i.e., doing I&M in places where we anticipate future Forest activities). We would desire a target sample of 10% of our inventory per year.

**Frequency of Measurement:** Annually

**Analysis Method:** Case-by-case determination of the cause (if any) of Changed Condition for a Heritage site.

**Last Year Accomplished:** **Cost for Year Scheduled:** \$500

**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$5,000

**Reporting Frequency:** 5 Years

**Estimated Cost - Explanation:** Estimate of \$50 per site monitoring/evaluation; 10% of inventory per year = 10+ sites. Thus \$50x10 = \$500 per year.

**Cooperators:**

**Monitoring Item Name:** Forestry Education Sites and Products

Item Reference # 33

**Monitoring Question** To what extent have Objectives been attained?

**Detailed Monitoring Question:** Were sites established on the Forest and interpretation/education products produced for forestry education?

**LRMP Tables Addressed:**

LRMP 4.1-3	LRMP 4.1-4	LRMP 4.1-5	LRMP 4.1-6	LRMP 4.1-7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**LRMP Reference:** Goal 12: Provide a diverse range of information and education opportunities that will enhance the understanding of the FLNF.

**LRMP Rationale/Driver:** Objective 5: Establish one site on the FLNF for demonstration forests, discovery trails, or plots and other living laboratories for teacher/non-formal educator use.

Objective 3 - Deliver at least one public interpretation and education (I&E) product annually in order to better protect and encourage stewardship of resources through increased public awareness

Objective 1: Expand internal and external public awareness of Forest Service management.

**Indicator & Measure:** Number of sites established for demonstration forests, discovery trails, or plots and other living laboratories.

Number of visitors at site.

Number of products produced and received (?)

**Data Collection Method:** Every 5 years, report on what sites have been established and what I&E products have been produced.

The number of visitors would be collected through sign-in sheets and number of attendance at Forest Service-led public tours.

How to gather information on how many people have received/viewed the products TBD

**Sample Design:**

**Frequency of Measurement:** 5 Years

**Analysis Method:**

**Last Year Accomplished:**

**Cost for Year Scheduled:** \$1,000

**Fiscal Year Scheduled:** 2011

**Cost Per Decade:** \$2,000

**Reporting Frequency:** 5 Years

**Estimated Cost - Explanation:** Estimate 1-3 days of staff time to collect data and compile

**Cooperators:**

<b>Monitoring Item Name:</b>	Partnerships Maintenance & Enhancement		
Item Reference #	35		
<b>Monitoring Question</b>	To what extent have Objectives been attained?		
<b>Detailed Monitoring Question:</b>	Are partnerships active and effective on the Forest and are Forest Service personnel participating in partnership activities?		
<b>LRMP Tables Addressed:</b>	LRMP 4.1-3 <input type="checkbox"/>	LRMP 4.1-4 <input type="checkbox"/>	LRMP 4.1-5 <input type="checkbox"/>
			LRMP 4.1-6 <input checked="" type="checkbox"/>
			LRMP 4.1-7 <input type="checkbox"/>
<b>LRMP Reference:</b>	Goal 15: Maintain and enhance partnerships.		
<b>LRMP Rationale/Driver:</b>	<p>Objectives 1 through 4:</p> <p>Increase the effective use of partnerships to achieve Forest goals.</p> <p>Increase coordination with other federal, State, county, and local agencies and the private sector in the prevention, control, containment, and monitoring of non-native invasive species.</p> <p>Establish, maintain, or enhance partnerships with community organizations for resource planning.</p> <p>Work with communities in community development to enhance social capital and economic baseline.</p>		
<b>Indicator &amp; Measure:</b>	<p>Number of formal partnership agreements (inter-agency, Challenge Cost Share, Memorandums of Understanding).</p> <p>Number of FS staff participating in outside organizations in official capacity (representing FS interest).</p> <p>Evaluation (narrative) of how the partnership has been effective in helping the Forest Service meet Goals and Objectives.</p> <p>Number of people hours contributed by partnerships.</p>		
<b>Data Collection Method:</b>	<p>Gather data from formal partnership agreements on lweb.</p> <p>Query FS staff on partnership participation and number of people hours contributed by partnerships, and narrative on effectiveness.</p>		
<b>Sample Design:</b>			
<b>Frequency of Measurement:</b>	Biannually		
<b>Analysis Method:</b>			
<b>Last Year Accomplished:</b>		<b>Cost for Year Scheduled:</b>	\$1,000
<b>Fiscal Year Scheduled:</b>	2008	<b>Cost Per Decade:</b>	\$5,000
<b>Reporting Frequency:</b>	Biannually		
<b>Estimated Cost - Explanation:</b>	Cumulative 3 days of time for all staff members.		
<b>Cooperators:</b>			

**Category: Human Dimensions****Monitoring Direction****Monitoring Item Name:** Payments to towns

Item Reference # 59

**Monitoring Question** To what extent have Objectives been attained?**Detailed Monitoring Question:** What was the amount paid to each GMNF town through PILT, 25% fund or Secure Schools. What type of communications have occurred on this topic with each town.**LRMP Tables Addressed:**LRMP 4.1-3 ☒ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☒ LRMP 4.1-7 ☐**LRMP Reference:** Goal 14: Support regional and local economies through resource production and resource protection.**LRMP Rationale/Driver:** Maintain communications with Forest communities with regard to Payment in Lieu of Taxes, 25 Percent Fund, and/or Secure Schools and Community Self-Determination Act.**Indicator & Measure:** Amount of payment to each town in each category, contacts made with towns about these programs.**Data Collection Method:** Dollar amounts reported to FLNF annually. Contacts could be part of satisfaction survey with towns or reported by FS staff.**Sample Design:****Frequency of Measurement:** Annually**Analysis Method:** tracking of consistency in payment levels to determine effect of NFS ownership on town financial health.**Last Year Accomplished:****Cost for Year Scheduled:** \$100**Fiscal Year Scheduled:** 2007**Cost Per Decade:** \$1,000**Reporting Frequency:** Annually**Estimated Cost - Explanation:** This would take a couple hours of staff time.**Cooperators:**

**Category: Human Dimensions****Monitoring Direction**

**Monitoring Item Name:** Teacher professional development in Forest stewardship

Item Reference # 34

**Monitoring Question** To what extent have Objectives been attained?

**Detailed Monitoring Question:** Did teacher professional development in Forest stewardship occur?

**LRMP Tables Addressed:**

LRMP 4.1-3	LRMP 4.1-4	LRMP 4.1-5	LRMP 4.1-6	LRMP 4.1-7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**LRMP Reference:** Goal 12: Provide a diverse range of information and education opportunities that will enhance the understanding of the FLNF.

**LRMP Rationale/Driver:** Objective 3: Include teacher development in stewardship of living systems in the educational outreach program.

**Indicator & Measure:** Number of teachers trained.

Number of programs offered.

**Data Collection Method:** A report is filed annually with cooperating government agencies (including the RO). The monitoring data is included in the report.

**Sample Design:**

**Frequency of Measurement:** Annually

**Analysis Method:**

**Last Year Accomplished:**

	<b>Cost for Year Scheduled:</b>	\$100
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<b>Fiscal Year Scheduled:</b>	2007	<b>Cost Per Decade:</b>	\$1,000
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**Reporting Frequency:** 5 Years

**Estimated Cost - Explanation:** Costs = less than one day's time per year.

**Cooperators:**

**Category: Invasive Species Population****Monitoring Direction****Monitoring Item Name:** Non-native invasive species

Item Reference # 62

**Monitoring Question** To what extent do Forest Service Management activities contribute toward restoration and maintenance of habitat for native and desirable non-native species?**Detailed Monitoring Question:** To what extent are non-native invasive species impacting other Forest resources?**LRMP Tables Addressed:**LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☒ LRMP 4.1-7 ☒**LRMP Reference:** Goal 2: Maintain and restore quality, amount, and distribution of habitats to produce viable and sustainable populations of native and desirable non-native plants and animals.**LRMP Rationale/Driver:** Non-native invasive species are one of what the FS chief sees as the top four threats to National Forest lands; Goal 2, Objective 6; effectiveness of standards and guidelines for Pests, Diseases, and Non-Native Invasive Species: S1 through S4 and G1 through G-5**Indicator & Measure:** Indicator: Extent of infestations  
Measures: Acres and/or priority sites surveyed; acres and/or priority sites infested; acres and/or priority sites treated; acres and/or priority sites with infestations reduced in size**Data Collection Method:** During the growing season, trained FS staff and volunteers record GPS coordinates in combination w/ net infestation and canopy cover to estimate NNIS net infestations. Sites surveyed are either those we most want to protect or those that have the greatest potential to be sources of seeds or plant propagules for places we most want to protect. Monitoring of known infestations is in locations where we want to determine invasiveness or where we want to know the results of treatment efforts.**Sample Design:** There is not a statistical component to the sample design. Sites monitored are those fitting the criteria described in "Data Collection Method". Monitoring will occur annually, but not in the same places.**Frequency of Measurement:** Annually**Analysis Method:** Compare acres or sites infested over time. No statistical measures have been used.**Last Year Accomplished:** **Cost for Year Scheduled:** \$5,000**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$50,000**Reporting Frequency:** Annually**Estimated Cost - Explanation:** Currently all funds are directed toward either small-scale Early Detection Rapid Response or completing Forest-wide environmental analyses for NNIS control. The above costs per year and per decade would allow us to monitor the results of these efforts, enter the data, and evaluate it. This amount would also allow us to monitor the effectiveness of standards and guidelines for NNIS and to inventory new sites (thus monitoring the impact of NNIS on other Forest resources).**Cooperators:** Volunteers currently help w/ site inventories

**Category: Lands****Monitoring Direction**

**Monitoring Item Name:** Land Ownership Adjustment  
Item Reference # 50

**Monitoring Question** To what extent have Objectives been attained?

**Detailed Monitoring Question:** To what extent has the Forest's land base been adjusted through purchase, exchange, transfer, interchange, boundary adjustment and donation?

**LRMP Tables Addressed:** LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☒ LRMP 4.1-7 ☐

**LRMP Reference:** Goal 13: Meet anticipated future needs and opportunities on public lands and improve management effectiveness of the FLNF through landownership adjustment activities.

**LRMP Rationale/Driver:**

**Indicator & Measure:** Indicator: Acres adjusted  
Measures: # of acres

**Data Collection Method:** Number of acres adjusted

**Sample Design:**

**Frequency of Measurement:** Annually

**Analysis Method:**

**Last Year Accomplished:** **Cost for Year Scheduled:** \$0

**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$0

**Reporting Frequency:** Annually

**Estimated Cost - Explanation:** The Forest has to report acres adjusted to the RO on a yearly basis. No additional cost for monitoring.

**Cooperators:**

**Monitoring Item Name:** Special Uses - Lands  
Item Reference # 57

**Monitoring Question** To what extent have Objectives been attained?

**Detailed Monitoring Question:** Is the Forest improving its administration of existing authorizations?

**LRMP Tables Addressed:** LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☒ LRMP 4.1-7 ☐

**LRMP Reference:** Goal 1: Provide for a wide range of uses and activities in an ecologically, socially, and economically sustainable way.

**LRMP Rationale/Driver:** National direction in the directives system as captured in Plan Standards and Guidelines.

**Indicator & Measure:** Percentage of authorizations administered to standard annually.

**Data Collection Method:** After a review of the authorization, a field inspection of the authorized use is conducted. Inspections are documented in the case file and the lweb SUDS database.

**Sample Design:**

**Frequency of Measurement:** 5 Years

**Analysis Method:**

**Last Year Accomplished:** **Cost for Year Scheduled:** \$250

**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$500

**Reporting Frequency:** 5 Years

**Estimated Cost - Explanation:** less than 1 day for each of resource assistant and program manager

**Cooperators:** For certain types of permits, other Federal, State or local agencies may have some responsibilities.



**Monitoring Item Name:** Costs of Plan Implementation

Item Reference # 60

**Monitoring Question** How close are actual costs to projected costs?

**Detailed Monitoring Question:** To what extent is the Forest providing a mix of products, services and amenities? This monitoring compares the level of expected socioeconomic outputs with actual levels. It also compares actual and estimated costs by program area. These comparisons are required by the Forest plan.

**LRMP Tables Addressed:**

LRMP 4.1-3	LRMP 4.1-4	LRMP 4.1-5	LRMP 4.1-6	LRMP 4.1-7
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**LRMP Reference:** Goal 1: Provide for a wide range of uses and activities in an ecologically, socially, and economically sustainable way.

**LRMP Rationale/Driver:** Required by Forest Plan outputs table; will identify trends and draw conclusions about the adequacy of the amount of goods, services, and amenities provided and whether or not the levels have had any adverse socioeconomic impacts within the forest region.

**Indicator & Measure:** GMNF Annual Budget and Expenditures by Program; GMNF Expenditures to produce items in App D. Proposed and Probable practices.

**Data Collection Method:** data will be collected through program managers.

**Sample Design:**

**Frequency of Measurement:** Annually

**Analysis Method:** The 2006 forest Plan did not estimate the costs of specific activities with the exception of the cost of producing board feet. The socio-economic section assumed the cost of all programs will remain the same except the need to increase timber program costs to produce more timber. Realistically we need to know the cost of outputs for each program. We need to establish a baseline of costs per output for programs based on current funding levels. We then need to monitor future costs per output to determine trends and inefficiencies.

**Last Year Accomplished:** **Cost for Year Scheduled:** \$0

**Fiscal Year Scheduled:** 2008 **Cost Per Decade:** \$0

**Reporting Frequency:** Annually

**Estimated Cost - Explanation:** Costs included in the same Monitoring Item for the GMNF.

**Cooperators:**

<b>Monitoring Item Name:</b>	Desired Future Condition				
Item Reference #	61				
<b>Monitoring Question</b>	What are the effects of management practices prescribed by the 2006 Forest Plan?				
<b>Detailed Monitoring Question:</b>	What activities have occurred in management areas. How have these management areas helped to achieve the desired future condition of the management area. Have activities occurred that detract from the desired future condition of the management area.				
<b>LRMP Tables Addressed:</b>	LRMP 4.1-3 <input type="checkbox"/>	LRMP 4.1-4 <input type="checkbox"/>	LRMP 4.1-5 <input type="checkbox"/>	LRMP 4.1-6 <input checked="" type="checkbox"/>	LRMP 4.1-7 <input type="checkbox"/>
<b>LRMP Reference:</b>	Goal 1: Provide for a wide range of uses and activities in an ecologically, socially, and economically sustainable way.				
<b>LRMP Rationale/Driver:</b>	This item provides a comprehensive approach to monitoring activities in management areas and the activities effect on reaching the desired future condition. It will also provide the FS with information needed for Wo information call on roadless, wilderness, HFRA.				
<b>Indicator &amp; Measure:</b>	number of acres, number of miles, with location of projects and discription of activity				
<b>Data Collection Method:</b>	FACTS, NEPA documents, INFRA				
<b>Sample Design:</b>					
<b>Frequency of Measurement:</b>	Annually				
<b>Analysis Method:</b>	This information will bew used to determine if the activites we are doing are consistent with the specified management of an area. Used with other monitoring data this data will provide the information needed to evaluate how well we are doing at meeting desired future conditions and temporally, tabulary and spatially tracking plan implementation activities.				
<b>Last Year Accomplished:</b>				<b>Cost for Year Scheduled:</b>	\$500
<b>Fiscal Year Scheduled:</b>	2007			<b>Cost Per Decade:</b>	\$5,000
<b>Reporting Frequency:</b>	Annually				
<b>Estimated Cost - Explanation:</b>	this assumes 3 staff days to determine and enter all forest projects with description and exact locations.				
<b>Cooperators:</b>					

**Monitoring Item Name:** Innovative, Coordinated Management and Energy Conservation

Item Reference # 32

**Monitoring Question** To what extent have Objectives been attained?

**Detailed Monitoring Question:** How many projects have been completed or undertaken that demonstrate innovative management practice, coordinated vegetation management as a tool to accomplish other resource objectives, and how the Forest is reducing the amount of energy used through conservation and use of renewable energy sources

**LRMP Tables Addressed:**

LRMP 4.1-3	LRMP 4.1-4	LRMP 4.1-5	LRMP 4.1-6	LRMP 4.1-7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**LRMP Reference:** Goal 9: Demonstrate innovative, scientifically, and ecologically sound management practices that can be applied to other lands.

**LRMP Rationale/Driver:** Also Goal 10 and 11, and all associated objectives. This is linked to some extent to monitoring item associated with demonstration forestry under Goal 19.

**Indicator & Measure:** What projects have been done and how well did they demonstrate innovation, coordination, and energy conservation?

Number of projects completed  
Number of projects underway  
Narrative on how each project demonstrates innovation, coordination, and/or energy conservation

**Data Collection Method:** query program coordinators and ask for numbers of projects that meet this item with a narrative for each project describing how it addresses Goals 9, 10, and 11.

**Sample Design:**

**Frequency of Measurement:** 5 Years

**Analysis Method:**

**Last Year Accomplished:** **Cost for Year Scheduled:** \$2,000

**Fiscal Year Scheduled:** 2011 **Cost Per Decade:** \$4,000

**Reporting Frequency:** 5 Years

**Estimated Cost - Explanation:** Every program area would need to write a narrative and identify what projects address monitoring item. Forest Planner would compile, organize, and assess (1-2 days)

**Cooperators:**

**Monitoring Item Name:** Outputs Accomplished - Other Resources

Item Reference # 28

**Monitoring Question** How close are actual outputs and services to projected outputs and services?

**Detailed Monitoring Question:** How do actual outputs compare to those projected in Appendix D, Proposed and Probable Practices, specifically related to heritage, recreation, roads, vegetation, rare, ecological, wildlife, and fisheries resources

**LRMP Tables Addressed:**

LRMP 4.1-3	LRMP 4.1-4	LRMP 4.1-5	LRMP 4.1-6	LRMP 4.1-7
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**LRMP Reference:** Goal 1: Provide for a wide range of uses and activities in an ecologically, socially, and economically sustainable way.

**LRMP Rationale/Driver:** This addresses NFMA requirements to report on outputs; this output item has been separated from timber output items as they are separated in Appendix D and the timber items address a specific goal (8)

**Indicator & Measure:** amounts per Table D-5

**Data Collection Method:** Query program coordinators and specialists to report on amounts associated with each resource area identified in Table D-5

**Sample Design:**

**Frequency of Measurement:** Annually

**Analysis Method:**

**Last Year Accomplished:** **Cost for Year Scheduled:** \$500

**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$5,000

**Reporting Frequency:** Annually

**Estimated Cost - Explanation:** estimate approximately 5 days of GS-11 (\$300/day) to query, report information, and set up in table

**Cooperators:**

**Monitoring Item Name:** Standards & Guidelines Compliance

Item Reference # 30

**Monitoring Question** To what extent have Standards and Guidelines been applied?

**Detailed Monitoring Question:** Did any project require guideline modification or a Forest Plan amendment to modify a standard? If so, what was the project? Which standard or guideline was changed? And What was the rationale for the change?

**LRMP Tables Addressed:**

LRMP 4.1-3	LRMP 4.1-4	LRMP 4.1-5	LRMP 4.1-6	LRMP 4.1-7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**LRMP Reference:** Goal 9: Demonstrate innovative, scientifically, and ecologically sound management practices that can be applied to other lands.

**LRMP Rationale/Driver:** No specific goal related to this but is required in Plan and Goal 9 seemed a good fit. This will help us evaluate the effectiveness of S&Gs

**Indicator & Measure:** # S&Gs modified or changed annually, tallied by standard or guideline, tallied by project, and tallied by resource area

**Data Collection Method:** The project leaders on every project will need to tally the S&Gs that were modified for that project and the rationale. NEPA coordinators will need to tally any projects where amendments were required to change a standard. Will need to develop a spreadsheet or database to store this information.

**Sample Design:**

**Frequency of Measurement:** Annually

**Analysis Method:**

**Last Year Accomplished:** **Cost for Year Scheduled:** \$1,000

**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$4,000

**Reporting Frequency:** Annually

**Estimated Cost - Explanation:** estimate 2 days in 07 to develop system to store the information, and then 1 day to query and compile information annually (\$300/day)

**Cooperators:**

**Monitoring Item Name:** Standards and Guidelines - Implementation and Effectiveness Monitoring

Item Reference # 31

**Monitoring Question** To what extent have Standards and Guidelines been applied?

**Detailed Monitoring Question:** Are standards, guidelines, and mitigation measures being implemented on projects consistent with Forest Plan and project NEPA direction? Are these measures effective at achieving the desired results? Are there other measures that could be more effective?

**LRMP Tables Addressed:** LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☒ LRMP 4.1-7 ☐

**LRMP Reference:** Goal 9: Demonstrate innovative, scientifically, and ecologically sound management practices that can be applied to other lands.

**LRMP Rationale/Driver:** All combined S&Gs are part of this, although Goal 9 also seems a good fit; required by Forest Plan and NFMA; also addresses monitoring item 3 in Table 4.1-6.

**Indicator & Measure:** A tally of S&Gs applicable to the project, those being applied, those not being applied or being mis-applied, and those that are not effective. Ratings or scorings TBD

**Data Collection Method:** select a set of projects that will be evaluated for this monitoring; IDTs will visit these projects as teams as identify S&Gs and mitigation measures that are being implemented, those that are effective, and those that are not being implemented or are not effective. Recommendations will be made regarding changes needed, including plan amendments to change S&G direction

**Sample Design:** select at least 1 large and 1 small project during the five year interval.  
select a variety of types of projects across the years to ensure all S&Gs that have been used are evaluated

**Frequency of Measurement:** 5 Years

**Analysis Method:**

**Last Year Accomplished:** **Cost for Year Scheduled:** \$7,000

**Fiscal Year Scheduled:** 2008 **Cost Per Decade:** \$14,000

**Reporting Frequency:** 5 Years

**Estimated Cost - Explanation:** FL may not have a monitoring project every FY. Costs reflect 1 project in a given year; two per decade.  
For one project/year, estimate 1 coordinator for 10 days, and 10 specialists for 1 day each.

**Cooperators:**

**Category: Range****Monitoring Direction****Monitoring Item Name:** Animal Unit Months

Item Reference # 55

**Monitoring Question** To what extent have Objectives been attained?**Detailed Monitoring Question:** Goal 7 (objective 1): Are we maintaining forage production sufficient to support approximately 10,000 Animal Unit Months (AUMs) annually?**LRMP Tables Addressed:** LRMP 4.1-3 ☒ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☐ LRMP 4.1-7 ☐**LRMP Reference:** Goal 7: Provide for the sustainable use of grasslands for grazing on the FLNF.**LRMP Rationale/Driver:** Goal 7 (Objective 1): Maintain forage production sufficient to support approximately 10,000 Animal Unit Months (AUMs) annually. It quantifies the available forage needs for livestock and is an LRMP indicator (p. 3-234 LRMP EIS).**Indicator & Measure:** Animal Unit Months (AUMs)**Data Collection Method:** Range Mgt. Handbook describes forage survey protocol. NNIS survey protocol available from GMFL NNIS coordinator. Both entail field measures & documentation of presence & abundance. Forage monitoring done annually to establish baseline forage production capability & determine. NNIS monitoring has been recently initiated by GMFL NNIS coordinator.**Sample Design:****Frequency of Measurement:** Annually**Analysis Method:** Reference: Eastern Region Forest Service-USDA, June, 1977 (supplement to FSH 2309 handbook, Range Inventory & Analysis)**Last Year Accomplished:** **Cost for Year Scheduled:** \$6,000**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$60,000**Reporting Frequency:** Annually**Estimated Cost - Explanation:** Annual forage monitoring contract averages \$2,000. NNIS monitoring estimated annual cost=\$3,000.  
Additional annual data analysis/mgt. estimated=\$1,000**Cooperators:** Contractors, volunteers, Hector Coop. Grazing Assoc.

**Category: Range****Monitoring Direction**

**Monitoring Item Name:** Watering facilities functional

Item Reference # 56

**Monitoring Question** To what extent have Objectives been attained?

**Detailed Monitoring Question:** Goal 7 (Objective 2): Are we providing functioning livestock watering facilities to support approximately 10,000 Animal Unit Months (AUMs) annually?

**LRMP Tables Addressed:**

LRMP 4.1-3	LRMP 4.1-4	LRMP 4.1-5	LRMP 4.1-6	LRMP 4.1-7
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**LRMP Reference:** Goal 7: Provide for the the sustainable use of grasslands for grazing on the FLNF.

**LRMP Rationale/Driver:** Goal 7 (Objective 1): Provide functioning livestock watering facilities to support approximately 10,000 Animal Unit Months (AUMs) annually. Maintenance & construction accomplishments can be readily quantified, enabling us to monitor accomplishment & costs to provide necessary watering systems.

**Indicator & Measure:** Number and condition of functioning systems and those in need of maintenance or construction.

**Data Collection Method:** Field check individual watering systems for condition and functionality. Determine where existing systems require fencing to protect integrity of pond structures from livestock. Determine needs for alternate systems (i.e. troughs) where gravity feed feasible from nearby stored water in pond. Determine costs to modify and enhance existing and new systems.

**Sample Design:**

**Frequency of Measurement:** Annually

**Analysis Method:** Reference: INFRA-Range Allotment Deferred Maintenance Condition Ratings

**Last Year Accomplished:** **Cost for Year Scheduled:** \$3,000

**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$30,000

**Reporting Frequency:** Annually

**Estimated Cost - Explanation:** Annual monitoring and data entry into INFRA-Deferred Maintenance Range database.

**Cooperators:** Hector Coop. Grazing Association



**Category: Rare Plants Population****Monitoring Direction****Monitoring Item Name:** RFSS Plant Population Trends

Item Reference # 10

**Monitoring Question** To what extent are Forest Service management activities contributing toward population viability for native and desired non-native species?**Detailed Monitoring Question:** What are the population trends for sensitive plants on the GMNF? To what extent is management sustaining or enhancing habitat conditions for populations?**LRMP Tables Addressed:** LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☒ LRMP 4.1-7 ☒**LRMP Reference:** Goal 2: Maintain and restore quality, amount, and distribution of habitats to produce viable and sustainable populations of native and desirable non-native plants and animals.**LRMP Rationale/Driver:** Required by ESA and NFMA; all objectives under the TES section of Goal 2; monitoring this item will determine the extent to RFSS populations are changing over time, possibly in response to our management actions**Indicator & Measure:** # of individuals; # flowering/in fruit; area of populations; ranked condition of populations

# RFSS plants with conservation assessments or plans, and number of conservation actions or site-specific prescriptions implemented

**Data Collection Method:** Use NHP protocols to gather data - gather data on phenology, reproductivity, areal extent, numbers of genets/ramets, site conditions, and use NHP protocols to rank A-D populations; approximately 17 sites for RFSS plants, monitor every 5 years, meaning 4 sites monitored annually, on average accomplish two sites/day.  
Record conservation plans and actions completed and implemented**Sample Design:****Frequency of Measurement:** Annually**Analysis Method:****Last Year Accomplished:** **Cost for Year Scheduled:** \$2,000**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$20,000**Reporting Frequency:** Annually**Estimated Cost - Explanation:** 4 sites to monitor/year, two/day, means 2 days for field surveys plus 3 days for data entry and travel or about \$2000 annually; cost can be reduced by using volunteers, but not until sites have all been GPS'd or otherwise marked.**Cooperators:**

**Category: Recreation****Monitoring Direction****Monitoring Item Name:** Effects of vehicle use off roads

Item Reference # 38

**Monitoring Question** Is the use of vehicles off roads causing considerable adverse effects on resources or other forest visitors; how effective are forest management practices in managing vehicle use off roads?**Detailed Monitoring Question:** What are the trends in the illegal use of vehicles off roads?**LRMP Tables Addressed:** LRMP 4.1-3 ☒ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☐ LRMP 4.1-7 ☐**LRMP Reference:** Goal 11: Provide a diverse range of high-quality, sustainable recreation opportunities that complement those provided off National Forest System lands.**LRMP Rationale/Driver:** Regulatory requirement (36 CFR 295). Focus is primarily on wheeled motorized vehicles.**Indicator & Measure:** Indicator: Trend in illegal use of motor vehicles off roads.  
Measures: Percent change in law enforcement incidents and violations.**Data Collection Method:** Data is collected using established procedures already being used by law enforcement personnel. As incidents and violations are noted, LEI personnel record information, including geographic data which can be retrieved later.**Sample Design:** Normally collection will be random and occurs with regular patrols.**Frequency of Measurement:** Annually**Analysis Method:****Last Year Accomplished:** **Cost for Year Scheduled:** \$1,000**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$10,000**Reporting Frequency:** Annually**Estimated Cost - Explanation:** Includes minimal costs to coordinate with LEI personnel and analyze data for annual reporting. About \$1000 per year to coordinate data retrieval and analyze data. Rec Program Manager and rec planner 1-2 days each.**Cooperators:**

**Monitoring Item Name:** Recreation Facility Maintenance

Item Reference # 40

**Monitoring Question** To what extent have Objectives been attained?

**Detailed Monitoring Question:** Is the Forest reducing deferred maintenance on developed recreation facilities and sites. Is the Forest increasing the number of recreation facilities that are maintained to standard.

**LRMP Tables Addressed:**

LRMP 4.1-3	LRMP 4.1-4	LRMP 4.1-5	LRMP 4.1-6	LRMP 4.1-7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**LRMP Reference:** Goal 11: Provide a diverse range of high-quality, sustainable recreation opportunities that complement those provided off National Forest System lands.

**LRMP Rationale/Driver:** Goal 11: Objective: Increase the number of developed recreation sites that are operated and maintained to standard.  
Goal 11: Objective: Reduce total deferred maintenance on FLNF developed recreation facilities.

**Indicator & Measure:** Indicator: Facilities/sites managed to standard  
Measures: Percent managed to standard and trends

**Data Collection Method:** Field condition inventories of recreation sites and facilities and data entered into I-WEB. We will use standard protocols for this type of facility.

**Sample Design:**

**Frequency of Measurement:** Annually

**Analysis Method:**

**Last Year Accomplished:** **Cost for Year Scheduled:** \$2,000

**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$22,000

**Reporting Frequency:** 5 Years

**Estimated Cost - Explanation:** The majority of costs are to complete annual condition inventories that will be used to develop the Facility Condition Index. 5 Days of GS-7 at 200 per day for data collection. 2 days data entry at GS-9 at 240/day = 480. 1 day of analysis annually. An additional \$1000 will be needed at 5 and 10 years for more detailed evaluation.

**Cooperators:**

**Monitoring Item Name:** Recreation Visitor Satisfaction

Item Reference # 41

**Monitoring Question** To what extent have Objectives been attained?

**Detailed Monitoring Question:** Are we providing high quality recreation services that meet the expectations of the public?

**LRMP Tables Addressed:**

LRMP 4.1-3	LRMP 4.1-4	LRMP 4.1-5	LRMP 4.1-6	LRMP 4.1-7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**LRMP Reference:** Goal 11: Provide a diverse range of high-quality, sustainable recreation opportunities that complement those provided off National Forest System lands.

**LRMP Rationale/Driver:** Goal 11 Various objectives. Determine if the tasks we are completing to bring facilities to standard are meeting expectations of the public.

**Indicator & Measure:** Visitor satisfaction from NVUM  
Measure: Mean Visitor satisfaction compared to Mean importance to visitor.

**Data Collection Method:** Follow national sampling procedures that are developed for each individual sample year. Samples for each National Forest occur on a five year rotating cycle.

**Sample Design:**

**Frequency of Measurement:** 5 Years

**Analysis Method:**

**Last Year Accomplished:**

**Cost for Year Scheduled:** \$32,000

**Fiscal Year Scheduled:** 2010

**Cost Per Decade:** \$66,000

**Reporting Frequency:** 5 Years

**Estimated Cost - Explanation:** Costs involve analysis and evaluation of NVUM data for the GMFL. FY 2005 survey costs of about 106,000, with about 70% from the GMNF and 30 % for the FLNF. About \$1000 per year for evaluation of data. (1-2 days each for Rec Program Manager and rec planner.

**Cooperators:**

**Category: Recreation****Monitoring Direction****Monitoring Item Name:** ROS settings

Item Reference # 36

**Monitoring Question** To what extent are ROS settings being provided?**Detailed Monitoring Question:** Is the Forest moving toward the desired future condition for ROS settings? This monitoring compares inventoried ROS settings at the time of Forest Plan revision with the inventory after 5 and 10 years of plan implementation.**LRMP Tables Addressed:** LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☐ LRMP 4.1-7 ☒**LRMP Reference:** Goal 11: Provide a diverse range of high-quality, sustainable recreation opportunities that complement those provided off National Forest System lands.**LRMP Rationale/Driver:****Indicator & Measure:** Indicator: Recreation opportunity settings  
Measures: Trends toward desired future condition**Data Collection Method:** This will involve completion of mapping using established protocols.**Sample Design:****Frequency of Measurement:** 5 Years**Analysis Method:****Last Year Accomplished:** **Cost for Year Scheduled:** \$1,200**Fiscal Year Scheduled:** 2011 **Cost Per Decade:** \$3,400**Reporting Frequency:** 5 Years**Estimated Cost - Explanation:** Costs are for staff time to complete revised inventory using computer techniques. Two days for GIS coordinator at \$290 per day for \$580. One day of analysis for recreation planner at \$270 per day equals \$270. One day coordination and analysis for Rec program manager at \$350 per day. Total needs about \$1200.00. Additional needs for evaluation equal 1 day each for rec planner and program manager 270 plus 350 equals about \$500 at 5 and 10 year timeframe.**Cooperators:**

**Monitoring Item Name:** Scenic Integrity Objectives (SIO's)

Item Reference # 17

**Monitoring Question** To what extent have Objectives been attained?

**Detailed Monitoring Question:** Has the Forest transitioned from the current Visual Management System to the Scenery Management System?

**LRMP Tables Addressed:**

LRMP 4.1-3	LRMP 4.1-4	LRMP 4.1-5	LRMP 4.1-6	LRMP 4.1-7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**LRMP Reference:** Goal 16: Maintain or enhance visual resources such as viewsheds, vistas, overlooks, and special features.

**LRMP Rationale/Driver:** Objective under Goal 16: Complete a transition from the current Visual Management System to the Scenery Management System.

**Indicator & Measure:** Percent of Forest with Scenic Integrity Objectives.

**Data Collection Method:** After Amendment to Forest Plan is complete we can say that this item has been accomplished. We are not monitoring for quality of transition from one system to another, just for accomplishment.

**Sample Design:**

**Frequency of Measurement:** 5 Years

**Analysis Method:**

**Last Year Accomplished:** **Cost for Year Scheduled:** \$0

**Fiscal Year Scheduled:** 2012 **Cost Per Decade:** \$0

**Reporting Frequency:** 5 Years

**Estimated Cost - Explanation:** There would be a nominal cost to determine if the Forest actually made the transition from the current Visual Mgt System to the Scenery Mgt System.

**Cooperators:**

**Category: Recreation****Monitoring Direction****Monitoring Item Name:** Special Uses - Recreation

Item Reference # 58

**Monitoring Question** To what extent have Objectives been attained?**Detailed Monitoring Question:** Is the Forest helping to provide a diverse range of high-quality, sustainable recreation opportunities by improving its administration of existing authorizations?**LRMP Tables Addressed:**  
LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☐ LRMP 4.1-7 ☒**LRMP Reference:** Goal 11: Provide a diverse range of high-quality, sustainable recreation opportunities that complement those provided off National Forest System lands.**LRMP Rationale/Driver:** National direction in the directives system as captured in Plan Standards and Guidelines.**Indicator & Measure:** Percentage of authorizations administered to standard annually.**Data Collection Method:** After a review of the authorization, a field inspection of the authorized use is conducted. Inspections are documented in the case file and the lweb SUDS database.**Sample Design:****Frequency of Measurement:** 5 Years**Analysis Method:****Last Year Accomplished:** **Cost for Year Scheduled:** \$250**Fiscal Year Scheduled:** 2011 **Cost Per Decade:** \$500**Reporting Frequency:** 5 Years**Estimated Cost - Explanation:** less than 1 day for each of resource assistant and program manager**Cooperators:**

**Monitoring Item Name:** Trail maintenance

Item Reference # 37

**Monitoring Question** Is the quality of the Forest Service trail system and recreation facilities being improved through operation and maintenance?

**Detailed Monitoring Question:** Is the amount of deferred maintenance on the FLNF trail system being reduced?

**LRMP Tables Addressed:**

LRMP 4.1-3	LRMP 4.1-4	LRMP 4.1-5	LRMP 4.1-6	LRMP 4.1-7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**LRMP Reference:** Goal 11: Provide a diverse range of high-quality, sustainable recreation opportunities that complement those provided off National Forest System lands.

**LRMP Rationale/Driver:** Goal 11, Objective: Reduce total deferred maintenance on the FLNF trail system.  
Goal 11, Objective: Increase the number of miles that are operated and maintained to standard.

**Indicator & Measure:** Indicator: Total deferred maintenance for Forest trail system  
Measures: Total deferred maintenance divided by total system trail miles for the Forest

**Data Collection Method:** Data will be gathered using trail condition survey protocols in place at the time of survey. It is assumed that the Forest will do approximately 10% of the trail system per year or about 3-4 miles per year.

**Sample Design:**

**Frequency of Measurement:** Annually

**Analysis Method:**

**Last Year Accomplished:** **Cost for Year Scheduled:** \$2,000

**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$21,240

**Reporting Frequency:** 5 Years

**Estimated Cost - Explanation:** 2 days for GS-7 at 200/day for data collection = \$400, 1 day for data entry for GS-9 = \$240, 1 days for rec planner for coordination and preparation = \$260 and then 1 day for GS-12 for analysis = \$350. Total needs = \$2000. Evaluation at 5 and 10 years - 1 day for Rec program manager and 1 day for Rec planner at \$270 = \$620 for each evaluation.

**Cooperators:**



**Monitoring Item Name:** Trends in trail partnerships

Item Reference # 39

**Monitoring Question** To what extent have Objectives been attained?

**Detailed Monitoring Question:** How well is the Forest using partnerships to assist in the operations and maintenance of the Forest trail system.

**LRMP Tables Addressed:**

LRMP 4.1-3	LRMP 4.1-4	LRMP 4.1-5	LRMP 4.1-6	LRMP 4.1-7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**LRMP Reference:** Goal 11: Provide a diverse range of high-quality, sustainable recreation opportunities that complement those provided off National Forest System lands.

**LRMP Rationale/Driver:** Goal 11 Objective: Increase the effective use of partnerships in the improvement, maintenance and operation of the Forest Trails System. The Forest has a large trail system with significant deferred maintenance. The annual trails budget covers only about 10% of calculated operations and maintenance for the existing system but the public continues to pressure for more new trails. The justification given for adding new trails to the system is that the partners will provide the maintenance. Though we have strong partners, we don't come close to covering total trail system needs. This item will provide a means to measure how well partner contributions are covering trail system operation and maintenance needs.

**Indicator & Measure:**  
 Indicators: Partner contributions in trail operations and maintenance  
 Measure: Percent of contributions (cash and in-kind) when compared to total calculated operations and maintenance needs.

**Data Collection Method:** Data is collected through the completion of agreements and regular condition inventory sampling for the trail system.

**Sample Design:**

**Frequency of Measurement:** Biannually

**Analysis Method:**

**Last Year Accomplished:** **Cost for Year Scheduled:** \$500

**Fiscal Year Scheduled:** 2008 **Cost Per Decade:** \$2,500

**Reporting Frequency:** Biannually

**Estimated Cost - Explanation:** Costs for trail condition surveys are covered under a separate monitoring item. Annual costs are to cover retrieval and analysis of information. Half - day each for the Rec program coordinator and Program Facilitator (Operations) \$500. 5 and 10 year evaluations. One day for rec program coordinator 350 taken twice = about \$1000

**Cooperators:**

**Monitoring Item Name:** Visual Quality Objectives (VQO's)

Item Reference # 16

**Monitoring Question** To what extent have Objectives been attained?

**Detailed Monitoring Question:** Is the Forest being managed in accordance with the visuals standards and guidelines found in the Forest Plan and are the visuals standards and guidelines and any additional site specific design criteria effective in helping to meet the VQO's (Visual Quality Objectives)?

**LRMP Tables Addressed:** LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☒ LRMP 4.1-7 ☐

**LRMP Reference:** S&Gs 2.3.14 - Visuals

**LRMP Rationale/Driver:** Goal 16: Maintain or enhance visual resources such as viewsheds, vistas, overlooks, and special features.

**Indicator & Measure:** # of projects or sites sampled that do not meet VQO's.  
Design criteria, mitigation and standards and guidelines applied on the ground will be looked at in conjunction with the overall project implementation to determine if the VQO's were met or not met. If not met, what could have been done to achieve the VQO and/or what could be done toward meeting the VQO?

**Data Collection Method:** Project reviews. Visually inspect a sample of implemented projects, identifying applied S&G's, design criteria and general project design for effectiveness in meeting or not meeting the VQO's.

**Sample Design:**

**Frequency of Measurement:** Annually

**Analysis Method:**

**Last Year Accomplished:** **Cost for Year Scheduled:** \$2,000

**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$20,000

**Reporting Frequency:** Annually

**Estimated Cost - Explanation:** Landscape Architect field/office time -5 Days  
Field Technician - 2 days

**Cooperators:**

**Monitoring Item Name:** Long Term Soil Quality and Soil Productivity Monitoring

Item Reference # 66

**Monitoring Question** Are the effects of Forest management, including prescriptions, resulting in significant changes to productivity of the land?

**Detailed Monitoring Question:** How are soil/site quality and productivity changing over the long term, in response to factors such as acid deposition, climate change, invasive species, other environmental problems, and forest management? More specifically: A) Are soil nutrient levels changing, and are the changes affecting soil/site productivity? B) What toxins exist in the soil (e.g. from the atmosphere), and how are they changing in quantity and type over time? Is this affecting productivity? C) Are forest management activities affecting soil/site productivity?

**LRMP Tables Addressed:**

LRMP 4.1-3	LRMP 4.1-4	LRMP 4.1-5	LRMP 4.1-6	LRMP 4.1-7
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**LRMP Reference:** Goal 3: Maintain or restore the natural, ecological functions of the soil.

**LRMP Rationale/Driver:** CFR 219.27a.1, and the Multiple-Use Sustained-Yield Act (June 12, 1960) require that we maintain the long term productivity of the land. "Land productivity" has been defined by the Forest Service to mean site or soil productivity. Soil/site productivity is typically measured by the FS in terms of volume or weight produced/unit/acre/year (see Forest Plan, p.156, definition of Soil Productivity). Potential indicators of change in soil productivity have also been developed by the research community. These indicators will be tracked via tree health and annual increment growth.

**Indicator & Measure:**

Indicator: Soil quality  
 Measures: Soil nutrient levels and toxins by major horizon.

Indicator: Soil productivity  
 Measures: Forest Health - NOTE that all information (monitoring justification, protocols, methods, and costs) regarding the soil productivity measures resides in the monitoring item with the Resource Keyword: Forest Health, and the Monitoring Item Name: How is tree health changing over time?

Indicator: Soil climate  
 Measures: Soil temperature and moisture, depth of freezing, correlated with selected meteorological parameters

**Data Collection Method:** To be determined.

**Sample Design:** To be determined

**Frequency of Measurement:** 5 Years

**Analysis Method:** To be determined

**Last Year Accomplished:** **Cost for Year Scheduled:** \$10,000

**Fiscal Year Scheduled:** 2011 **Cost Per Decade:** \$10,000

**Reporting Frequency:** 10 Years

**Estimated Cost - Explanation:** Costs in 2011 to develop data collection and analysis methods. First year of data collection is 2012. Costs for data collection to be determined.

**Cooperators:**

<b>Monitoring Item Name:</b>	Soil and Water S&G, Mitigation Measure, and Soil Quality Standard Compliance			
Item Reference #	67			
<b>Monitoring Question</b>	To what extent have Standards and Guidelines been applied?			
<b>Detailed Monitoring Question:</b>	Were S&Gs and mitigation measures implemented on selected projects, and to a lesser extent, were they effective in protecting the soil & water resources? Are soil quality standards met (a FS Manual requirement)?			
<b>LRMP Tables Addressed:</b>	LRMP 4.1-3 <input type="checkbox"/>	LRMP 4.1-4 <input type="checkbox"/>	LRMP 4.1-5 <input type="checkbox"/>	LRMP 4.1-6 <input checked="" type="checkbox"/>
				LRMP 4.1-7 <input type="checkbox"/>
<b>LRMP Reference:</b>	Goal 3: Maintain or restore the natural, ecological functions of the soil.			
<b>LRMP Rationale/Driver:</b>	NFMA requires us to monitor compliance with S&Gs. FSM2509.18-91-1 also requires to establish and monitor compliance with soil quality standards. Monitoring also helps us understand the effects of our management practices on soil quality, soil productivity, water quality, and riparian and aquatic characteristics.			
<b>Indicator &amp; Measure:</b>	Indicator: S&Gs and mitigation measures Measures: Percent of time implemented Indicator: Soil Quality Standards (currently being developed for the Forest) Measures: Percent of time met			
<b>Data Collection Method:</b>	For S&G and mitigation measure monitoring - Visit selected projects and record observations on a Forest standard form developed using Access. Data is a combination of quantitative and qualitative. Protocols are spelled out on the data forms. Data collection methods for Soil Quality Monitoring are in development, but they will be similar.			
<b>Sample Design:</b>	Monitoring focuses on projects with a moderate or high risk of resource damage if S&Gs and mitigation measures are not followed. Moderate or high risks are present when: soil disturbance is anticipated close to streams or wetlands; a large amount of soil disturbance is expected; steep slopes or erosive soils are present; the project is close to a potential wild or scenic river; or other specific risks identified in the EA/EIS.			
<b>Frequency of Measurement:</b>	Variable depending on the assessment of risk to the resources			
<b>Analysis Method:</b>	There are 3 types of analyses: 1. Immediate analysis to determine if corrective actions is needed in the field, now.. 2. Annual summarization of data to determine the percent of the time S&Gs, mitigation measures, and Soil Quality Standards are met. Summaries are done by: a) individual measure (e.g. the percent of the time G-10 is implemented), and b) cumulatively (e.g. percent of the time all S&Gs and mitigation measures are implemented). Important comments on the data forms are also summarized. Analysis results are included in the annual Forest M&E report.			
<b>Last Year Accomplished:</b>		<b>Cost for Year Scheduled:</b>	\$2,000	
<b>Fiscal Year Scheduled:</b>	2007	<b>Cost Per Decade:</b>	\$20,000	
<b>Reporting Frequency:</b>	Annually			
<b>Estimated Cost - Explanation:</b>	Costs are primarily salaries for soil and water people to collect & analyze data.			
<b>Cooperators:</b>	Forest Management Team			

<b>Monitoring Item Name:</b>	Ecological Type Mapping and Representation			
Item Reference #	8			
<b>Monitoring Question</b>	To what extent have Objectives been attained?			
<b>Detailed Monitoring Question:</b>	To what extent are ecological types on the Forest represented within the ecological reference area network? To what extent do ecological types recognized on the Forest accurately represent the diversity of ecosystems and potential natural vegetation on the Forest?			
<b>LRMP Tables Addressed:</b>	LRMP 4.1-3 <input type="checkbox"/>	LRMP 4.1-4 <input type="checkbox"/>	LRMP 4.1-5 <input type="checkbox"/>	LRMP 4.1-6 <input checked="" type="checkbox"/>
				LRMP 4.1-7 <input type="checkbox"/>
<b>LRMP Reference:</b>	Goal 5: Maintain or restore ecological processes and systems on the FLNF within desired ranges of variability, including a variety of native vegetation and stream channel types, and their patterns and structural components.			
<b>LRMP Rationale/Driver:</b>	<p>In order to accurately measure the objective in the revised Plan to manage at least 5% of each eco-type on the Forest for old growth characteristics, one needs to ensure that classification systems used to identify eco-types accurately represent the diversity of types and potential natural vegetation</p> <p>As new land is purchased, proportions may change and some uncommon types in the Taconics may become more prevalent on the GM and therefore less well represented in the reference area network.</p>			
<b>Indicator &amp; Measure:</b>	<p># acres and proportion of the FLNF with up-to-date ecological maps consistent with the NHFEU, including interpretations for management and potential natural vegetation</p> <p># acres and proportion of ecological types within the reference area network</p>			
<b>Data Collection Method:</b>	<p>for representation in the reference area network, overlay maps of eco-types with updated MA maps and identify acres within reference area network (see FEIS).</p> <p>For updating eco-maps, premap the Forest using existing GIS layers, develop eco-type and map unit concepts, then field sample using integrated plots to verify and characterize units. For more information see TEUI protocol (September 2005, GTR WO-68)</p>			
<b>Sample Design:</b>				
<b>Frequency of Measurement:</b>	5 Years			
<b>Analysis Method:</b>	see TEUI Technical Guide (GTR WO-68, September 2005)			
<b>Last Year Accomplished:</b>		<b>Cost for Year Scheduled:</b>	\$1,000	
<b>Fiscal Year Scheduled:</b>	2007	<b>Cost Per Decade:</b>	\$2,000	
<b>Reporting Frequency:</b>	5 Years			
<b>Estimated Cost - Explanation:</b>	estimate no more than a day of a person's time to calculate each year, a little more for 5-year comprehensive, cumulatively not more than \$2,000 over 10 years; \$1000 cost in first year scheduled includes organizing the information and getting Terra figured out.			
<b>Cooperators:</b>	possibly Hobart & William Smith College, Cornell (Steve deGloria)			

**Monitoring Item Name:** Grassland Habitat

Item Reference # 26

**Monitoring Question** To what extent do Forest Service Management activities contribute toward restoration and maintenance of habitat for native and desirable non-native species?**Detailed Monitoring Question:** What are the conditions of grasslands and pastures on the FLNF? What are the vegetative conditions and wildlife use patterns of grazed and non-grazed grasslands? Do maintenance programs produce desired conditions?**LRMP Tables Addressed:**  
LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☒ LRMP 4.1-7 ☒**LRMP Reference:** Goal 2: Maintain and restore quality, amount, and distribution of habitats to produce viable and sustainable populations of native and desirable non-native plants and animals.**LRMP Rationale/Driver:** NFMA requirement to maintain viability (36 CFR 219.19);**Indicator & Measure:** Various: vegetation database queries, long-term site inspection and vegetative measures of grassland and pasture condition, breeding bird surveys**Data Collection Method:** Various: vegetation database queries, long-term site inspection and vegetative measures of grasslands and pasture conditions, breeding bird surveys**Sample Design:****Frequency of Measurement:** 5 Years**Analysis Method:** Various**Last Year Accomplished:** **Cost for Year Scheduled:** \$2,500**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$5,000**Reporting Frequency:** 5 Years**Estimated Cost - Explanation:****Cooperators:** Cornell University

**Category: Terrestrial Wildlife Habitat****Monitoring Direction****Monitoring Item Name:** MIS Habitat Trends

Item Reference # 25

**Monitoring Question** To what extent do Forest Service Management activities contribute toward restoration and maintenance of habitat for native and desirable non-native species?**Detailed Monitoring Question:** What are habitat trends for MIS? To what extent is FS management providing suitable habitat for MIS?**LRMP Tables Addressed:** LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☒ LRMP 4.1-6 ☐ LRMP 4.1-7 ☐**LRMP Reference:** Goal 2: Maintain and restore quality, amount, and distribution of habitats to produce viable and sustainable populations of native and desirable non-native plants and animals.**LRMP Rationale/Driver:** NFMA requirement to maintain viability (36 CFR 219.19);  
NFMA requirements for MIS (36 CFR 219.19(a));  
Goal 2, pp.10-12; Monitoring & Evaluation for MIS, p.71**Indicator & Measure:** Various (species-specific); vegetation database queries**Data Collection Method:** Various (species-specific); vegetation database queries, site inspection of deer wintering areas**Sample Design:** Various (species-specific)**Frequency of Measurement:** 5 Years**Analysis Method:** Various (species-specific)**Last Year Accomplished:** **Cost for Year Scheduled:** \$1,000**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$2,000**Reporting Frequency:** 5 Years**Estimated Cost - Explanation:****Cooperators:** Cornell University

**Category: Terrestrial Wildlife Habitat****Monitoring Direction****Monitoring Item Name:** Wildlife Reserve Trees

Item Reference # 27

**Monitoring Question** To what extent do Forest Service Management activities contribute toward restoration and maintenance of habitat for native and desirable non-native species?**Detailed Monitoring Question:** Are we retaining the best individual trees & snags? How do they persist/improve/degrade over time? How well did retained future trees & snags develop over time?**LRMP Tables Addressed:** LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☒ LRMP 4.1-7 ☒**LRMP Reference:** Goal 2: Maintain and restore quality, amount, and distribution of habitats to produce viable and sustainable populations of native and desirable non-native plants and animals.**LRMP Rationale/Driver:** NFMA requirement to maintain viability (36 CFR 219.19);  
Goal 2, pp.10-12; Wildlife Reserve Tree S&Gs pp.25-26**Indicator & Measure:** Site inspection and long-term observation of reserve trees**Data Collection Method:** Various: long-term site inspection of individual reserve trees and snags**Sample Design:****Frequency of Measurement:** 5 Years**Analysis Method:** Various**Last Year Accomplished:** **Cost for Year Scheduled:** \$2,000**Fiscal Year Scheduled:** 2010 **Cost Per Decade:** \$4,000**Reporting Frequency:** 5 Years**Estimated Cost - Explanation:** estimated 8 person days/year at \$250/day in harvested stands; includes travel days.**Cooperators:** VFWD



**Category: Terrestrial Wildlife Population****Monitoring Direction****Monitoring Item Name:** Bald Eagle

Item Reference # 18

**Monitoring Question** To what extent are Forest Service management activities contributing toward population viability for native and desired non-native species?**Detailed Monitoring Question:** Do we have bald eagles on/near the FLNF? Are they nesting? Are they nesting successfully? Do they need site-specific protection or habitat management?**LRMP Tables Addressed:** LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☐ LRMP 4.1-7 ☒**LRMP Reference:** Goal 2: Maintain and restore quality, amount, and distribution of habitats to produce viable and sustainable populations of native and desirable non-native plants and animals.**LRMP Rationale/Driver:** NFMA requirement to maintain viability (CFR 219.19)  
ESA protect and conserve T&E species  
Goal 2, pp.10-12; Den and Nest Tree G-2, p.26; TES S&Gs, pp.26-27**Indicator & Measure:** Number & location of individuals, documented nests**Data Collection Method:** Contact and information sharing with cooperators: USFWS, NYDEC, NWF**Sample Design:****Frequency of Measurement:** Annually**Analysis Method:****Last Year Accomplished:** **Cost for Year Scheduled:** \$0**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$0**Reporting Frequency:** Annually**Estimated Cost - Explanation:** Monitoring accomplished through ongoing and continuing contact and interaction with cooperators, such as USFWS, NYDEC, NWF**Cooperators:** USFWS, NYDEC, NWF

**Category: Terrestrial Wildlife Population****Monitoring Direction****Monitoring Item Name:** MIS Population Trends

Item Reference # 24

**Monitoring Question** To what extent are Forest Service management activities contributing toward population viability for native and desired non-native species?**Detailed Monitoring Question:** What are population trends of MIS? To what extent are MIS responding to FS management of suitable habitat?**LRMP Tables Addressed:** LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☒ LRMP 4.1-6 ☐ LRMP 4.1-7 ☐**LRMP Reference:** Goal 2: Maintain and restore quality, amount, and distribution of habitats to produce viable and sustainable populations of native and desirable non-native plants and animals.**LRMP Rationale/Driver:** NFMA requirement to maintain viability (36 CFR 219.19);  
NFMA requirements for MIS (36 CFR 219.19(a));  
Goal 2, pp.10-12; Monitoring & Evaluation for MIS, p.71**Indicator & Measure:** Various (species-specific)**Data Collection Method:** Various (species-specific): breeding bird survey, drumming counts, nest counts**Sample Design:** Various (species-specific)**Frequency of Measurement:** Annually**Analysis Method:** Various (species-specific)**Last Year Accomplished:** **Cost for Year Scheduled:** \$1,500**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$15,000**Reporting Frequency:** Annually**Estimated Cost - Explanation:** combination of FS employees, volunteers and project coordination.**Cooperators:** Cornell University

**Category: Terrestrial Wildlife Population****Monitoring Direction****Monitoring Item Name:** Northern Goshawk

Item Reference # 19

**Monitoring Question** To what extent are Forest Service management activities contributing toward population viability for native and desired non-native species?**Detailed Monitoring Question:** What is the population trend of northern goshawks on the GMNF and adjacent lands?**LRMP Tables Addressed:** LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☐ LRMP 4.1-7 ☒**LRMP Reference:** Goal 2: Maintain and restore quality, amount, and distribution of habitats to produce viable and sustainable populations of native and desirable non-native plants and animals.**LRMP Rationale/Driver:** NFMA requirement to maintain viability (CFR 219.19)  
Goal 2, pp.10-12; TES S&Gs, pp.26-27**Indicator & Measure:** Number & location of individuals, documented nests**Data Collection Method:** Contact and information sharing with cooperators: NYDEC, Kestrel Haven**Sample Design:****Frequency of Measurement:** Annually**Analysis Method:****Last Year Accomplished:** **Cost for Year Scheduled:** \$0**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$0**Reporting Frequency:** Annually**Estimated Cost - Explanation:** Monitoring accomplished largely through ongoing and continuing contact and interaction with cooperators, such as NYDEC, Kestrel Haven**Cooperators:** NYDEC, Kestrel Haven

**Category: Terrestrial Wildlife Population****Monitoring Direction****Monitoring Item Name:** TES Bats

Item Reference # 20

**Monitoring Question** To what extent are Forest Service management activities contributing toward population viability for native and desired non-native species?**Detailed Monitoring Question:** Do Indiana and Eastern Small-footed bats roost, forage, hibernate on FLNF? Do they need protection or habitat management?**LRMP Tables Addressed:** LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☐ LRMP 4.1-7 ☒**LRMP Reference:** Goal 2: Maintain and restore quality, amount, and distribution of habitats to produce viable and sustainable populations of native and desirable non-native plants and animals.**LRMP Rationale/Driver:** NFMA requirement to maintain viability (CFR 219.19)  
ESA protect and conserve T&E species  
Goal 2, pp.10-12; Wildlife Reserve Tree S&Gs, pp.25-26; TES S&Gs, pp.26-27**Indicator & Measure:** Presence, location, and number of individuals**Data Collection Method:** Mist-net and acoustic sampling surveys**Sample Design:** Indiana Bat Recovery Team survey and sampling protocols**Frequency of Measurement:** Annually**Analysis Method:****Last Year Accomplished:** **Cost for Year Scheduled:** \$1,000**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$10,000**Reporting Frequency:** Annually**Estimated Cost - Explanation:** total cost to monitor this item on both the GM and FL is \$6,000. Some years, the entire \$6,000 will be spend on the GM. When we do collect data on the FL, that portion will cost \$1,000, leaving \$5,000 for the GM.**Cooperators:** USFWS, NYDEC, VFWD

**Category: Terrestrial Wildlife Population****Monitoring Direction****Monitoring Item Name:** TES Herptiles (snakes, turtles, salamanders)

Item Reference # 22

**Monitoring Question** To what extent are Forest Service management activities contributing toward population viability for native and desired non-native species?**Detailed Monitoring Question:** What are the population trends of black rat snake; bog and wood turtles; Jefferson, blue-spotted, longtail, and slimy salamanders on the FLNF and adjacent lands? Do they need protection or habitat management?**LRMP Tables Addressed:**  
LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☐ LRMP 4.1-7 ☒**LRMP Reference:** Goal 2: Maintain and restore quality, amount, and distribution of habitats to produce viable and sustainable populations of native and desirable non-native plants and animals.**LRMP Rationale/Driver:** NFMA requirement to maintain viability (CFR 219.19)  
ESA protect and conserve T&E species  
Goal 2, pp.10-12; TES S&Gs, pp.26-27**Indicator & Measure:** Presence, location, and number of individuals or reported sightings**Data Collection Method:** Contact and information sharing with cooperators: USFWS, NYDEC, Kestrel Haven, contractors**Sample Design:****Frequency of Measurement:** Annually**Analysis Method:****Last Year Accomplished:** **Cost for Year Scheduled:** \$500**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$5,000**Reporting Frequency:** Annually**Estimated Cost - Explanation:****Cooperators:** USFWS, NYDEC, Kestrel Haven, contractors

**Category: Terrestrial Wildlife Population****Monitoring Direction****Monitoring Item Name:** TES Mammals (wolf, cougar, lynx)

Item Reference # 21

**Monitoring Question** To what extent are Forest Service management activities contributing toward population viability for native and desired non-native species?**Detailed Monitoring Question:** Do gray wolves, eastern cougars, or Canada lynx occur on or near the FLNF?**LRMP Tables Addressed:** LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☐ LRMP 4.1-7 ☒**LRMP Reference:** Goal 2: Maintain and restore quality, amount, and distribution of habitats to produce viable and sustainable populations of native and desirable non-native plants and animals.**LRMP Rationale/Driver:** NFMA requirement to maintain viability (CFR 219.19)  
ESA protect and conserve T&E species  
Goal 2, pp.10-12; TES S&Gs, pp.26-27**Indicator & Measure:** Presence, location, and number of individuals or reported sightings**Data Collection Method:** Contact and information sharing with cooperators: USFWS, VFWD, NWF, VINS**Sample Design:****Frequency of Measurement:** Annually**Analysis Method:****Last Year Accomplished:** **Cost for Year Scheduled:** \$0**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$0**Reporting Frequency:** Annually**Estimated Cost - Explanation:** Monitoring accomplished through ongoing and continuing contact and interaction with cooperators, such as USFWS, VFWD, VINS**Cooperators:** USFWS, NYDEC

**Category: Terrestrial Wildlife Population****Monitoring Direction****Monitoring Item Name:** West Virginia White (RFSS butterfly)

Item Reference # 23

**Monitoring Question** To what extent are Forest Service management activities contributing toward population viability for native and desired non-native species?**Detailed Monitoring Question:** Do West Virginia whites occur on FLNF? Do they need protection or habitat management?**LRMP Tables Addressed:** LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☐ LRMP 4.1-7 ☒**LRMP Reference:** Goal 2: Maintain and restore quality, amount, and distribution of habitats to produce viable and sustainable populations of native and desirable non-native plants and animals.**LRMP Rationale/Driver:** NFMA requirement to maintain viability (CFR 219.19)  
ESA protect and conserve T&E species  
Goal 2, pp.10-12; TES S&Gs, pp.26-27**Indicator & Measure:** Presence, location, and number of individuals or reported sightings**Data Collection Method:** Contact and information sharing with cooperators: VINS  
Dragonfly and butterfly surveys**Sample Design:****Frequency of Measurement:** 5 Years**Analysis Method:****Last Year Accomplished:** **Cost for Year Scheduled:** \$2,500**Fiscal Year Scheduled:** 2008 **Cost Per Decade:** \$5,000**Reporting Frequency:** 5 Years**Estimated Cost - Explanation:****Cooperators:** Kestrel Haven, contractors

**Category: Vegetation****Monitoring Direction**

<b>Monitoring Item Name:</b>	Age Class Distribution within lands where even-aged management is allowed			
Item Reference #	6			
<b>Monitoring Question</b>	To what extent have Objectives been attained?			
<b>Detailed Monitoring Question:</b>	To what extent are management actions and natural processes moving age class structure of lands managed using even-aged silvicultural systems toward desired objectives in Table 2.2-2 in the revised Plan?			
<b>LRMP Tables Addressed:</b>	LRMP 4.1-3 <input type="checkbox"/>	LRMP 4.1-4 <input type="checkbox"/>	LRMP 4.1-5 <input type="checkbox"/>	LRMP 4.1-6 <input checked="" type="checkbox"/>
				LRMP 4.1-7 <input checked="" type="checkbox"/>
<b>LRMP Reference:</b>	Goal 2: Maintain and restore quality, amount, and distribution of habitats to produce viable and sustainable populations of native and desirable non-native plants and animals.			
<b>LRMP Rationale/Driver:</b>	Connected to viability question in Table 7, as well as the following objectives in the Plan: Apply the following age-class objectives (Table 2.2-2) to suitable lands that will be managed using even-aged silvicultural systems to provide a variety of habitat conditions for wildlife and create a balanced distribution of age classes to meet timber objectives. Also the following objective: Maintain a full range of age classes from young to old, including late successional and multi-age conditions, within management areas where age class can be actively manipulated toward goals, objectives, and desired future conditions			
<b>Indicator &amp; Measure:</b>	# of acres and proportion of each forest type in each age class			
<b>Data Collection Method:</b>	query CDS database regarding year of origin for stands which have either had an even-aged treatment or have an even-age prescription; stand prescribers gather the data during silvexam, and silviculturists enter changes in data after activities have been implemented			
<b>Sample Design:</b>	See Silvexam handbook			
<b>Frequency of Measurement:</b>	5 Years			
<b>Analysis Method:</b>	Comparison of current (FEIS) age class distribution to age class distribution at the time of analysis, and with the desired age class distribution in Table 2.2-2 in the revised Plan			
<b>Last Year Accomplished:</b>		<b>Cost for Year Scheduled:</b>	\$300	
<b>Fiscal Year Scheduled:</b>	2009	<b>Cost Per Decade:</b>	\$3,000	
<b>Reporting Frequency:</b>	5 Years			
<b>Estimated Cost - Explanation:</b>	Cost of Silvexam is built into composition item; otherwise about a days worth of someone's time to run queries and crunch numbers; over 10 years adding up to about \$3000			
<b>Cooperators:</b>				



**Category: Vegetation****Monitoring Direction****Monitoring Item Name:** Aspen-Birch & Early Successional Habitat

Item Reference # 4

**Monitoring Question** To what extent have Objectives been attained?**Detailed Monitoring Question:** How many acres are being treated with varying management actions to maintain and increase aspen-birch and regenerating forest?**LRMP Tables Addressed:** LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☒ LRMP 4.1-7 ☒**LRMP Reference:** Goal 2: Maintain and restore quality, amount, and distribution of habitats to produce viable and sustainable populations of native and desirable non-native plants and animals.**LRMP Rationale/Driver:** Objective: Maintain, and where desirable increase, the acres of aspen and regenerating forest in order to support species that prefer these habitats**Indicator & Measure:** # acres treated to maintain; # acres treated to create**Data Collection Method:** of acres harvested (timber) or treated non-commercially (WL or timber), identify the number of acres that are creating or maintaining aspen-birch or early successional habitat**Sample Design:****Frequency of Measurement:** 5 Years**Analysis Method:** Compare acres of existing (FEIS) aspen-birch and early successional habitat based on CDS queries to new acres created and acres maintained.**Last Year Accomplished:****Cost for Year Scheduled:****Fiscal Year Scheduled:** 2009**Cost Per Decade:****Reporting Frequency:** 5 Years**Estimated Cost - Explanation:** COST BUILT IN FORESTWIDE HABITAT COMPOSITION ITEM. estimate no more than a day of a person's time to calculate each year, a little more for the 5-year comprehensive, cumulatively not more than 3,000 over 10 years**Cooperators:**

**Monitoring Item Name:** Conversion of conifer plantations to native hardwoods

Item Reference # 1

**Monitoring Question** To what extent have Objectives been attained?

**Detailed Monitoring Question:** How many acres are being treated with varying management actions that remove non-native conifer plantations and replace with native hardwoods?

**LRMP Tables Addressed:**

LRMP 4.1-3	LRMP 4.1-4	LRMP 4.1-5	LRMP 4.1-6	LRMP 4.1-7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**LRMP Reference:** Goal 2: Maintain and restore quality, amount, and distribution of habitats to produce viable and sustainable populations of native and desirable non-native plants and animals.

**LRMP Rationale/Driver:** Objective: Maintain northern hardwood forests, native softwood forests, and forests of oak, hickory, and pine, on sites that ecologically support these habitats

**Indicator & Measure:** # of acres treated to remove non-native conifer plantations

**Data Collection Method:** Of acres harvested, identify those where the intent was to convert plantations to native hardwoods

**Sample Design:**

**Frequency of Measurement:** 5 Years

**Analysis Method:** Compare acres of existing (FEIS) plantation forest based on CDS queries to new acres created due to conversion

**Last Year Accomplished:**

**Cost for Year Scheduled:**

**Fiscal Year Scheduled:** 2009

**Cost Per Decade:**

**Reporting Frequency:** 5 Years

**Estimated Cost - Explanation:** COST BUILT IN FORESTWIDE HABITAT COMPOSITION ITEM. estimate no more than a day of a person's time to calculate each year, a little more for the 5-year comprehensive, cumulatively not more than 3,000 over 10 years

**Cooperators:**

**Monitoring Item Name:** Forest-wide Habitat Composition (landscape scale)

Item Reference # 11

**Monitoring Question** To what extent have Objectives been attained?

**Detailed Monitoring Question:** To what extent are management actions and natural processes moving Forest composition toward desired objectives in table 2.2-1 of the revised Plan?

**LRMP Tables Addressed:**

LRMP 4.1-3	LRMP 4.1-4	LRMP 4.1-5	LRMP 4.1-6	LRMP 4.1-7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

**LRMP Reference:** Goal 2: Maintain and restore quality, amount, and distribution of habitats to produce viable and sustainable populations of native and desirable non-native plants and animals.

**LRMP Rationale/Driver:** This relates to species viability in that it measures habitat suitability for various species; applicable objectives are those associated with composition under Goal 2

**Indicator & Measure:** number of acres and proportion in each type

**Data Collection Method:** Silvexam - see handbooks  
Data gathered annually on project areas; areas may not see more than one inventory in a 15-year span of time; for areas where inventories are not likely to recur within the next 15 years or areas outside the suitable timber base, inventories will be remotely based (satellites, photography, TEUI) with some field sampling, or will use previously gathered data where composition is not likely to change

**Sample Design:** see Silvexam handbook

**Frequency of Measurement:** 5 Years

**Analysis Method:** Comparison of current (FEIS) composition values with desired values in Table 2.2-1 of Forest Plan

**Last Year Accomplished:** **Cost for Year Scheduled:** \$1,000

**Fiscal Year Scheduled:** 2009 **Cost Per Decade:** \$2,000

**Reporting Frequency:** 5 Years

**Estimated Cost - Explanation:** estimate about 2 days at year 5 and 10.  
The \$1000 per year covers some of the other composition items as well - including conversion of plantations, aspen-birch and early successional.

**Cooperators:**

**Category: Vegetation****Monitoring Direction****Monitoring Item Name:** Late-successional forest

Item Reference # 5

**Monitoring Question** To what extent have Objectives been attained?**Detailed Monitoring Question:** How many acres are there within the old forest age class, and how many acres are developing late successional forest characteristics?**LRMP Tables Addressed:** LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☒ LRMP 4.1-7 ☐**LRMP Reference:** Goal 2: Maintain and restore quality, amount, and distribution of habitats to produce viable and sustainable populations of native and desirable non-native plants and animals.**LRMP Rationale/Driver:** Objective: Increase acres of late-successional and old forest habitats through natural successional processes within lands not suitable for timber management, and through use of extended rotations within lands suitable for timber management**Indicator & Measure:** # acres within the old age class (not including aspen-birch)  
# acres inventoried to evaluate late successional characteristics; proportion that contain late successional characteristics  
# acres treated to enhance late successional characteristics**Data Collection Method:** Query CDS for acres in old age class; Query activity reports for acres treated to enhance late successional characteristics. Acres inventoried can be obtained through either or both regular Silvexam inventory by adapting it to identify the indicator lichen species, or sampling a series of plots in mature or old forest age classes to monitor when late-successional characteristics start to appear**Sample Design:** Sampling for late successional characteristic monitoring could be built into a long term monitoring plot project being developed, which would represent the major forest communities across the Forest; could use GM as model for development. Monitoring would occur every 5 years, while inventory if associated with landscape assessments could occur annually. Could set up 4 plots on the FL (two in NH and two in OH)**Frequency of Measurement:** 5 Years**Analysis Method:** Compare acres of existing (FEIS) old forest habitat based on CDS queries to acres that have been enhanced or that have aged into the old age class.

Develop a model based on inventory and monitoring to determine the likelihood that forests of a particular type and age are developing late-successional characteristics.

**Last Year Accomplished:** **Cost for Year Scheduled:** \$2,000**Fiscal Year Scheduled:** 2008 **Cost Per Decade:** \$6,000**Reporting Frequency:** 5 Years**Estimated Cost - Explanation:** [Yr 1: \$2000; Yr 6: \$2000; Yr 11: \$2,000] establish 4 plots on FL - 5 days of sampling, data entry, travel; gather data every 5 years so there are 3 occurrences of this data gathering.**Cooperators:**

<b>Monitoring Item Name:</b>	Oak and Oak-Pine Forest Maintenance and Restoration				
Item Reference #	2				
<b>Monitoring Question</b>	To what extent have Objectives been attained?				
<b>Detailed Monitoring Question:</b>	How many acres are being treated with varying management actions that will likely result in the maintenance and restoration of oak and oak-pine forests, and oak within oak-northern hardwood forests?				
<b>LRMP Tables Addressed:</b>	LRMP 4.1-3 <input type="checkbox"/>	LRMP 4.1-4 <input type="checkbox"/>	LRMP 4.1-5 <input type="checkbox"/>	LRMP 4.1-6 <input checked="" type="checkbox"/>	LRMP 4.1-7 <input checked="" type="checkbox"/>
<b>LRMP Reference:</b>	Goal 2: Maintain and restore quality, amount, and distribution of habitats to produce viable and sustainable populations of native and desirable non-native plants and animals.				
<b>LRMP Rationale/Driver:</b>	Objective: Maintain northern hardwood forests, native softwood forests, and forests of oak, hickory, and pine, on sites that ecologically support these habitats				
<b>Indicator &amp; Measure:</b>	# acres treated to maintain; # acres treated to restore				
<b>Data Collection Method:</b>	Of acres harvested, treated for WL, and treated with fire, calculate the acres for which the intent was to maintain and restore oak and oak-pine				
<b>Sample Design:</b>					
<b>Frequency of Measurement:</b>	5 Years				
<b>Analysis Method:</b>	Compare acres of existing (FEIS) oak, oak-pine, and northern hardwood with oak forest based on CDS queries to new acres created due to restoration, and acres maintained.				
<b>Last Year Accomplished:</b>				<b>Cost for Year Scheduled:</b>	\$300
<b>Fiscal Year Scheduled:</b>	2011			<b>Cost Per Decade:</b>	\$3,000
<b>Reporting Frequency:</b>	5 Years				
<b>Estimated Cost - Explanation:</b>	estimate no more than a day of a person's time to calculate each year, a little more for the 5-year comprehensive, cumulatively not more than 3,000 over 10 years				
<b>Cooperators:</b>					

**Monitoring Item Name:** Oak Regeneration

Item Reference # 3

**Monitoring Question** To what extent have Objectives been attained?

**Detailed Monitoring Question:** How many acres were treated to encourage oak regeneration

**LRMP Tables Addressed:**

LRMP 4.1-3	LRMP 4.1-4	LRMP 4.1-5	LRMP 4.1-6	LRMP 4.1-7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

**LRMP Reference:** Goal 5: Maintain or restore ecological processes and systems on the FLNF within desired ranges of variability, including a variety of native vegetation and stream channel types, and their patterns and structural components.

**LRMP Rationale/Driver:** Also goal 2 - see Oak and Oak-Pine Forest Maintenance and Restoration item; Objective: Manage oak-pine natural communities on the FLNF to maintain their presence and continuity on the Forest, using natural as well as human-caused disturbance processes including fire use when necessary

**Indicator & Measure:** Acres certified as stocked with oak and oak-pine regeneration  
Proportion of stands where cultural activities needed to ensure successful oak regeneration have been undertaken within the first 15-20 years of stand regeneration

**Data Collection Method:** Identify from the acres reported for stocking surveys those where oak regeneration has been certified to have been successful or where oak continues to be an important component of the stand

**Sample Design:**

**Frequency of Measurement:** 5 Years

**Analysis Method:** Evaluate the acres treated for oak regeneration against (a) those certified as successful through stocking surveys and (b) those where cultural activities needed have also been implemented. This indicates whether we are doing what we say, and if doing these things work.

**Last Year Accomplished:** **Cost for Year Scheduled:** \$300

**Fiscal Year Scheduled:** 2011 **Cost Per Decade:** \$3,000

**Reporting Frequency:** 5 Years

**Estimated Cost - Explanation:** estimate no more than a day of a person's time to calculate each year, a little more for the 5-year comprehensive, cumulatively not more than 3,000 over 10 years

**Cooperators:**

**Category: Vegetation****Monitoring Direction**

<b>Monitoring Item Name:</b>	Outputs Accomplished - Volume and Acres of Timber Offered and Sold				
Item Reference #	29				
<b>Monitoring Question</b>	How close are actual outputs and services to projected outputs and services?				
<b>Detailed Monitoring Question:</b>	How do actual outputs compare to those projected in Appendix D, Proposed and Probable Practices, specifically related to timber offered and sold				
<b>LRMP Tables Addressed:</b>	LRMP 4.1-3 <input type="checkbox"/>	LRMP 4.1-4 <input checked="" type="checkbox"/>	LRMP 4.1-5 <input type="checkbox"/>	LRMP 4.1-6 <input type="checkbox"/>	LRMP 4.1-7 <input type="checkbox"/>
<b>LRMP Reference:</b>	Goal 8: Provide for a sustainable supply of forest products.				
<b>LRMP Rationale/Driver:</b>	To determine if timber sale outputs for the GMNF are being accomplished as outlined in Appendix D of the Forest Plan.				
<b>Indicator &amp; Measure:</b>	Acres of even-aged regeneration harvest annually and total for the decade. Acres of even-aged intermediate harvest annually and total for the decade. Acres of uneven aged harvest annually and total for the decade. MMBF Volume of Sawtimber and Pulp offered and sold in FY and decade.				
<b>Data Collection Method:</b>	Utilize timber sale accounting reports to identify: the amount of volume offered and sold each fiscal year; acres of even-aged regeneration harvest and intermediate harvest; acres of uneven-aged harvest; and acres of total harvest.				
<b>Sample Design:</b>	None needed. Data will come directly from timber data bases.				
<b>Frequency of Measurement:</b>	Annually				
<b>Analysis Method:</b>					
<b>Last Year Accomplished:</b>		<b>Cost for Year Scheduled:</b>	\$500		
<b>Fiscal Year Scheduled:</b>	2007	<b>Cost Per Decade:</b>	\$5,000		
<b>Reporting Frequency:</b>	Annually				
<b>Estimated Cost - Explanation:</b>	estimate about \$500/year - cost of program manager to gather data and provide to planner for incorporation into M&E report				
<b>Cooperators:</b>					

**Category: Vegetation****Monitoring Direction****Monitoring Item Name:** Rare or Outstanding Natural Areas

Item Reference # 9

**Monitoring Question** To what extent have Objectives been attained?**Detailed Monitoring Question:** To what extent are rare and outstanding biological, ecological, or geological features on the GMNF being protected, maintained, or enhanced?**LRMP Tables Addressed:** LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☒ LRMP 4.1-7 ☒**LRMP Reference:** Goal 6: Protect rare or outstanding biological, ecological, or geological areas on the FLNF.**LRMP Rationale/Driver:** Related to the single Goal 7 objective, as well as to viability in Table 7 as many of these areas include rare species**Indicator & Measure:** # conservation actions taken to protect, maintain, or enhance these areas  
Ranked condition of identified areas (A-D)  
# acres inventoried for rare or outstanding features (includes inventory for TES species)**Data Collection Method:** Use TEUI to identify new significant features; use project reviews in other areas to do this inventory. Monitor the condition of known significant sites every 5 years - place all sites on a rotation so that every year 1/5 of sites are monitored. Monitor before and after management actions occur within or adjacent to these sites**Sample Design:** 11 sites have a significant feature related to a natural community; this means about 2 sites/year should be monitored. Monitoring will occur via a walk-through using NHP protocols for evaluating site rank (A-D)**Frequency of Measurement:** Annually**Analysis Method:** Compare # of new sites found per acre inventoried to historical numbers during previous surveys  
Compare condition of sites when last assessed by NHP with condition during monitoring  
Evaluate monitoring before and after actions within and adjacent to sites to determine if actions contributed to or detracted from composition, structure, and function of the sites in relation to their values**Last Year Accomplished:** **Cost for Year Scheduled:** \$2,000**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$20,000**Reporting Frequency:** Annually**Estimated Cost - Explanation:** cost of inventory captured in TEUI costs; no cost for reporting on actions taken; cost of monitoring - 1 field day plus 2 days data & travel = \$2,000**Cooperators:** VNNHP?



**Monitoring Item Name:** Regeneration Harvest Opening Size

Item Reference # 42

**Monitoring Question** Are maximum size limits for harvest areas appropriate, and should these limits be retained?

**Detailed Monitoring Question:** Is the maximum opening size for even-aged harvesting being met and are we accomplishing resource objectives. Are we meeting wildlife habitat regeneration objectives in both size and quantity of openings by habitat types. This is a required Forest Plan monitoring item. It helps whether we have met standards for maximum opening size and scenic integrity.

**LRMP Tables Addressed:**

LRMP 4.1-3	LRMP 4.1-4	LRMP 4.1-5	LRMP 4.1-6	LRMP 4.1-7
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**LRMP Reference:** S&Gs 2.3.5 - Openings

**LRMP Rationale/Driver:**

**Indicator & Measure:** Quantitative comparisons of on-the-ground condition and Forest Plan standards. The Facts database will be queried to get stand information. Individual stand prescriptions will also be monitored through timber sale reviews

**Data Collection Method:** Quantitative comparisons of on-the-ground conditions and Forest plan standards. Query the FSVeg database (or FACTS or CDS if FS Veg is not available) to get stand information. Individual stand prescriptions will also be monitored through annual timber sale reviews.

**Sample Design:**

**Frequency of Measurement:** 5 Years

**Analysis Method:** The data base comparison will be made against standards.

**Last Year Accomplished:** **Cost for Year Scheduled:** \$4,000

**Fiscal Year Scheduled:** 2010 **Cost Per Decade:** \$8,000

**Reporting Frequency:** 5 Years

**Estimated Cost - Explanation:**

**Cooperators:**

**Monitoring Item Name:** Shelterwood with Reserves

Item Reference # 44

**Monitoring Question** What are the effects of management practices prescribed by the 2006 Forest Plan?

**Detailed Monitoring Question:** Can the shelterwood w/reserves method be used to: 1. maintain the big tree character in visually sensitive areas or to convert low quality stands to uneven-aged structure, 2. the ability to leave good quality, wind-firm trees of sufficient number, size, and distribution to maintain a pleasing overstory, and 3. the ability to retain the overstory until the regenerated stand is commercially thinned in 40-60 years.

**LRMP Tables Addressed:**

LRMP 4.1-3	LRMP 4.1-4	LRMP 4.1-5	LRMP 4.1-6	LRMP 4.1-7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**LRMP Reference:** Goal 9: Demonstrate innovative, scientifically, and ecologically sound management practices that can be applied to other lands.

**LRMP Rationale/Driver:** The Kelly Sale Plot was established in 1990. The plot was re-measured annually and are providing long term data sets.

**Indicator & Measure:** 1. survival and growth of overstory trees. 2. Epicormic branching response to overstory trees and 3. Regeneration response to this cutting method overtime.

**Data Collection Method:** 1. Approximately 30 overstory trees have been tagged and have been measured for survival, DBH growth, tree grade, epicormic branching and damage. Trees have been identified with a driven wire and aluminium numbered tag placed below stump height. 2. Approximately 10 regeneration stocking plots have been marked with plastic stakes. 1/700 acre plots have been used to sample seedlings and 1/100 acre plots have been used to sample saplings. The plot centers have been marked with white fiberglass rods with orange tips. Aluminium write-on tags have been used to number the regeneration plots. 3. Four primary corners using fiberglass boundary stakes have been established for permanent photo points

**Sample Design:**

**Frequency of Measurement:** 5 Years

**Analysis Method:** The forest Silviculturist will evaluate the plot data to determine if the results are meeting Forest Plan expectations. Silvicultural guidelines will be developed for its use based on monitoring results.

**Last Year Accomplished:** **Cost for Year Scheduled:** \$1,000

**Fiscal Year Scheduled:** 2008 **Cost Per Decade:** \$2,000

**Reporting Frequency:** 5 Years

**Estimated Cost - Explanation:** The primary cost will be personnel time to actually remeasure the plots (1 person day)

**Cooperators:**

**Category: Vegetation****Monitoring Direction****Monitoring Item Name:** Stocking Level

Item Reference # 45

**Monitoring Question** Are harvested lands adequately restocked according to Plan goals?**Detailed Monitoring Question:** Are lands adequately restocked? The NFMA requires that suitable timberlands are adequately restocked following harvest. This monitoring item helps to determine if we are meeting this requirement.**LRMP Tables Addressed:** LRMP 4.1-3 ☒ LRMP 4.1-4 ☒ LRMP 4.1-5 ☐ LRMP 4.1-6 ☐ LRMP 4.1-7 ☐**LRMP Reference:** S&Gs 2.3.4 - Timber or vegetation management**LRMP Rationale/Driver:** Stocking Surveys (1, 3rd or 5th year).**Indicator & Measure:****Data Collection Method:** The R9 FSH 2409.26b (Reforestation Handbook) is being updated. The handbook will provide protocol for stocking surveys.**Sample Design:** FSH 2409.26b provides the sample design. The GMNF historically has used 1/750 acre plots through the harvested stand to determine stocking percent.**Frequency of Measurement:** Annually**Analysis Method:** FSH 2409.26b will provide current direction in the analysis of stocking percent. It will establish R9 standards for reforestation (stocking) levels.**Last Year Accomplished:** **Cost for Year Scheduled:** \$1,000**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$10,000**Reporting Frequency:** Annually**Estimated Cost - Explanation:** Costs are only for the reporting the summary results. Actual survey costs are part of the program of work which is usually funded by CWKV or NFVW/RTRT.**Cooperators:**

**Category: Vegetation****Monitoring Direction****Monitoring Item Name:** Suited Timber Lands

Item Reference # 46

**Monitoring Question** To what extent is timber management occurring on lands suitable for such production?**Detailed Monitoring Question:** Are lands termed unsuitable for timber production adequately described and mapped?**LRMP Tables Addressed:**  
LRMP 4.1-3 ☒ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☐ LRMP 4.1-7 ☐**LRMP Reference:** S&Gs 2.3.4 - Timber or vegetation management**LRMP Rationale/Driver:** This is a NFMA legally required item. This monitoring helps identify where timber harvest can take place.**Indicator & Measure:****Data Collection Method:** Record the acres of unsuitable and suitable lands inventoried.**Sample Design:****Frequency of Measurement:** 10 Years**Analysis Method:** The analysis will be the acres of suitable land and unsuitable lands in 2006 and 2016. A comparison will be made to determine if significant acres have changed in suitability. If significant, an ASQ analysis should be conducted and may require a Forest Plan amendment or change.**Last Year Accomplished:** **Cost for Year Scheduled:** \$10,000**Fiscal Year Scheduled:** 2016 **Cost Per Decade:** \$10,000**Reporting Frequency:** 10 Years**Estimated Cost - Explanation:** Data will be used from stand inventories. Costs only include the anticipated analysis costs associated with using existing information. It does not include stand examination and inventory costs associated with field data collection. While stand exam will occur annually, this analysis will occur on a 10 year basis.**Cooperators:**

**Monitoring Item Name:** Sustainability of Special Forest Product Gathering

Item Reference # 12

**Monitoring Question** To what extent have Objectives been attained?

**Detailed Monitoring Question:** How many and what special forest products do people gather? How many require permits, and how many permits were issued annually, for which products/species? How many requests for permits were denied? How many SFPs are being evaluated for permit requirement?

**LRMP Tables Addressed:** LRMP 4.1-3 ☐ LRMP 4.1-4 ☐ LRMP 4.1-5 ☐ LRMP 4.1-6 ☒ LRMP 4.1-7 ☐

**LRMP Reference:** Goal 8: Provide for a sustainable supply of forest products.

**LRMP Rationale/Driver:** Objective: provide sustainable opportunities to harvest special forest products

**Indicator & Measure:** # & type of SFPs being gathered/requiring permits  
# permits issued/denied by SFP  
# & type of SFPs under evaluation

**Data Collection Method:** Run queries in FACTS to determine what permits have been issued for which SFPs, and what SFPs require permits; Eco-bot program to provide information on what SFPs are being evaluated; work with NRS - Marla Emery - on implementing 2002 proposal to assess what products are being gathered on the FL.

**Sample Design:** see Emery proposal 2002

**Frequency of Measurement:** Annually

**Analysis Method:**

**Last Year Accomplished:** **Cost for Year Scheduled:** \$500

**Fiscal Year Scheduled:** 2007 **Cost Per Decade:** \$3,200

**Reporting Frequency:** Annually

**Estimated Cost - Explanation:** [Yr1: \$500; Yr2: included in GMNF; other yrs \$300] In 07, simply report on FACTS queries; in FY08, initiate and complete Emery study on what is gathered on FL (cost was built into study for GM & FL, so cost is shown in GM item not here); remaining years involved reporting, which would amount to at most \$2000, and could include some monitoring of products that may be at risk (est \$2000)

**Cooperators:** Northern Research Station

**Category: Vegetation****Monitoring Direction**

<b>Monitoring Item Name:</b>	Trends in Vegetative Community Composition (site-level scale)			
Item Reference #	63			
<b>Monitoring Question</b>	To what extent are Forest Service management activities contributing toward population viability for native and desired non-native species?			
<b>Detailed Monitoring Question:</b>	How the vegetation composition is changing over time from the influence of acid deposition, climate change, invasive species and other environmental problems, in combination and separate from land management practices.			
<b>LRMP Tables Addressed:</b>	LRMP 4.1-3 <input type="checkbox"/>	LRMP 4.1-4 <input type="checkbox"/>	LRMP 4.1-5 <input type="checkbox"/>	LRMP 4.1-6 <input type="checkbox"/>
				LRMP 4.1-7 <input checked="" type="checkbox"/>
<b>LRMP Reference:</b>	Goal 5: Maintain or restore ecological processes and systems on the FLNF within desired ranges of variability, including a variety of native vegetation and stream channel types, and their patterns and structural components.			
<b>LRMP Rationale/Driver:</b>	Under a changing climate it is not going to be able to maintain the present vegetation composition especially when a climate change works in conjunction with acid deposition, invasive species and other environmental problems. This monitoring will be necessary to characterize and quantify changes in the vegetation on FLNF caused by the above listed environmental problems. This monitoring should focus on the shrub and herbaceous layers. The herbaceous layer will include tree seedlings until they grow above the herbaceous layer.			
<b>Indicator &amp; Measure:</b>	Indicator: Present vegetation composition on FLNF Measures: Vegetation in the herbaceous and shrub layers			
<b>Data Collection Method:</b>	To be determined			
<b>Sample Design:</b>	To be determined			
<b>Frequency of Measurement:</b>	5 Years			
<b>Analysis Method:</b>	To be determined			
<b>Last Year Accomplished:</b>		<b>Cost for Year Scheduled:</b>	\$10,000	
<b>Fiscal Year Scheduled:</b>	2011	<b>Cost Per Decade:</b>	\$10,000	
<b>Reporting Frequency:</b>	5 Years			
<b>Estimated Cost - Explanation:</b>	Costs in 2011 to develop data collection and analysis methods. First year of data collection is 2012. Costs for data collection to be determined.			
<b>Cooperators:</b>				

**Monitoring Item Name:** Uneven-aged Management

Item Reference # 7

**Monitoring Question** To what extent have Objectives been attained?

**Detailed Monitoring Question:** How many acres of land suitable for timber management were treated using uneven-aged silvicultural systems to create multi-age conditions, and what proportion of the annual harvest acres do these acres represent? What proportion of the lands suitable for timber management has an uneven-aged prescription?

**LRMP Tables Addressed:**

LRMP 4.1-3	LRMP 4.1-4	LRMP 4.1-5	LRMP 4.1-6	LRMP 4.1-7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**LRMP Reference:** Goal 2: Maintain and restore quality, amount, and distribution of habitats to produce viable and sustainable populations of native and desirable non-native plants and animals.

**LRMP Rationale/Driver:** Objective: Manage a minimum of 20% of lands suitable for timber management using uneven-aged silvicultural systems to create multi-age conditions

**Indicator & Measure:** # acres and proportion of harvest acres treated with uneven-aged systems  
# acres with uneven-aged prescriptions

**Data Collection Method:** Query CDS on the number of acres within the 2 commercial Mas with uneven-aged prescriptions; query harvest acres reported at the end of each year for the number of acres harvested and acres that were harvested using uneven-age systems

**Sample Design:** N/A

**Frequency of Measurement:** 5 Years

**Analysis Method:** Compare acres with uneven-age Rx and acres harvested with uneven-age mgmt to the 20% threshold identified in the revised Plan

**Last Year Accomplished:** **Cost for Year Scheduled:** \$300

**Fiscal Year Scheduled:** 2009 **Cost Per Decade:** \$600

**Reporting Frequency:** 5 Years

**Estimated Cost - Explanation:** estimate no more than a day of a person's time to calculate each year.

**Cooperators:**

<b>Monitoring Item Name:</b>	Forest-wide Water Quality Monitoring (FLNF)				
Item Reference #	65				
<b>Monitoring Question</b>	To what extent is Forest management affecting water quality, quantity, flow timing, and the physical features of aquatic, fisheries, riparian, vernal pool, and wetland habitats?				
<b>Detailed Monitoring Question:</b>	What is the existing status of water quality on the FLNF, and how are our management activities affecting water quality?				
<b>LRMP Tables Addressed:</b>	LRMP 4.1-3 <input type="checkbox"/>	LRMP 4.1-4 <input type="checkbox"/>	LRMP 4.1-5 <input type="checkbox"/>	LRMP 4.1-6 <input type="checkbox"/>	LRMP 4.1-7 <input checked="" type="checkbox"/>
<b>LRMP Reference:</b>	Goal 4: Maintain or restore aquatic, fisheries, riparian, and wetland habitats.				
<b>LRMP Rationale/Driver:</b>	This monitoring (along with other types of monitoring) address whether we are meeting Goal 4 - Maintain or restore aquatic, fisheries, riparian, vernal pool, and wetland habitats. Water quality is one critical component of these resources.				
<b>Indicator &amp; Measure:</b>	Indicator: Water Quality Measures: For water quality - Dissolved Oxygen (DO), pH, Nitrite, Nitrate, Total N., Phosphate, Temperature, E. Coli, Turbidity, Conductivity, Total Dissolved Solids (TDS), stream area, velocity, and flow. Macroinvertebrate monitoring is also sometimes done to characterize water quality.				
<b>Data Collection Method:</b>	Methods documented in the draft GMNF Water Quality Monitoring Plan, 2006-2009. This document will reside on the K drive when finalized in late FY06. A similar Plan for the FLNF needs to be developed. Briefly, methods consist of collecting water samples in bottles. Some water tests are completed in the field or in the lab at the Supervisors Office. Other tests, including the macroinvertebrate monitoring, are contracted.				
<b>Sample Design:</b>	Sampling design not documented, however it focuses on streams and ponds in grazing areas where there is a higher risk of stream or groundwater contamination. In summary, sampling design consists of collecting water samples at 1-3 locations in selected streams and ponds. Streams and ponds are selected for monitoring based on the: 1) Need to characterize the existing water quality condition and status of macroinvertebrate populations to establish baseline conditions; and 2) Need to determine to what extent, and in what ways, does our management activities affect water quality?				
<b>Frequency of Measurement:</b>	Annually				
<b>Analysis Method:</b>	Analysis methods used on the FLNF are similar to those documented in the draft GMNF Water Quality Monitoring Plan, 2006-2009. Analysis consists of annual statistical summaries and comparison of data to accepted thresholds, such as State Water Quality Standards.				
<b>Last Year Accomplished:</b>		<b>Cost for Year Scheduled:</b>	\$4,500		
<b>Fiscal Year Scheduled:</b>	2007	<b>Cost Per Decade:</b>	\$45,000		
<b>Reporting Frequency:</b>	Annually				
<b>Estimated Cost - Explanation:</b>	Annual costs: Water sampling via contract - \$ 2,500 Equipment - \$500. e.coli tests - \$1,000 Data compilation and analysis - \$500.				
<b>Cooperators:</b>					